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GASTRO-JEJUNOSTOMY WITH A TRANSVERSE JEJUNAL INCISION*

An Experimental and Clinical Study

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THE selection of suitable cases for operation and the proper operative procedure for the individual cases are crucial factors in the surgical treatment of chronic gastric and duodenal ulcers. The latter problem is complicated on account of certain faults inherent in the mechanics of the orthodox methods for making gastrojejunal anastomoses. These faults are largely dependent on the longitudinal jejunal incision which severs the circular muscle fibres throughout the length of the stoma. The contraction of the severed circular muscle fibres can have no effect on the propulsion of food along the intestinal tract but merely shortens the distance between the edges of the stoma. Finally atrophy of the severed muscles may lead to the formation of an atonic dilated pouch and subsequent obstruction resulting from an acute angulation or valve formation at the site of the anastomosis.

These objectional features led to the development[1, 2, 3] of a different type of anastomosis during which minimal injury is inflicted upon the circular muscle by the utilization of a transverse jejunal incision. The purpose of this communication is to summarize the results of several years' study (experimental and clinical) on the motor-mechanism of and the results obtained with this type of operative procedure.

OPERATIVE TECHNIQUE FOR POSTERIOR GASTRO-JEJUNOSTOMY WITH TRANSVERSE JEJUNAL INCISION

The stomach, transverse colon, and omentum are turned upward to expose the under surface of the transverse mesocolon, as in the usual procedure. The duodenojejunal junction is located. The posterior surface of the stomach is exposed by an opening made through an avascular portion of the transverse mesocolon. The stomach is delivered and the part required for the anastomosis is located. A guide suture is inserted at either end of the proposed incision into the stomach.

The line of the gastric incision may be selected as in the standard procedures. In the cases herewith reported the opening was made so that the stoma would lie vertically or extend from above downward and to the right at an angle of 45 degrees with the horizontal. The exact line has been selected in each instance so that there was no rotation or kinking of the jejunum proximal to the anastomosis. The opening in the mesocolon is closed by suturing the cut edges to the stomach wall.

The jejunum is lifted into position for a short-loop operation. A point is selected between adjacent straight intestinal arteries, and two small crushing clamps are applied side by side extending across two-thirds to three-fourths of the diameter of the intestine. A margin of ¼ inch is left at the mesenteric border. After an incision is made between the clamps, their handles are separated and the direction of the original transverse incision is changed to run parallel to the long axis of the intestine. This portion of the jejunum is approximated to the stomach along the line of the proposed gastric incision so that the distal loop will lie near the greater curvature. A posterior row of interrupted silk sutures is inserted. Care is taken that the middle suture is accurately placed opposite the end of the original jejunal incision. An incision is made into the stomach of the same length as the jejunal stoma (approximately 2½ inches). The bleeding is controlled with ligatures of fine plain catgut. The crushing clamps are removed, and the crushed edges of the jejunum are excised. The anastomosis may be completed in accordance with the operator's preference. The usual procedure in this series has been to commence in the middle of the anastomosis posteriorly with a No. 0 chromic catgut suture and carry it in either direction as a continuous through-and-through locked stitch. This suture is carried around the angles as a continuous, inverting mattress stitch, until the anastomosis is completely closed. Care is taken to invert a minimal amount on the jejunal side and

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thus avoid producing an unduly large diaphragm. The anterior layer is reinforced with interrupted mattress sutures of fine black silk to complete the anastomosis. The stomach and transverse colon are replaced and the distal jejunal loop gravitates downward at right angles to the greater curvature in the optimum mechanical position. The proximal and distal openings are each approximately the size of the cross section of the jejunum (Figure I).

FIGURE I. Gastro-enterostomy with a transverse jejunal incision. The posterior wall of the stomach has been exposed. The jejunal clamps have been separated and the stomach and jejunum have been approximated by means of a posterior row of interrupted sutures. The method of making the transverse jejunal incision is shown in the insert. The broken line indicates the proposed gastric incision.

DISCUSSION

A basis for the mechanical deficiencies in the orthodox gastro-jejunostomy (longitudinal jejunal incision) was clearly demonstrated by Cannon and Blake[4] about twenty years ago. These investigators repeatedly observed the passage of food through the patent pylorus into the duodenum and back into the stomach via the gastro-jejunal opening. Such circulation of food usually occurred when the stomach was dilated by large amounts of food and water. This phenomenon is the result of valve formation at the anastomosis (Figure II). They observed that distention of the stomach frequently leads to separation of the edges of the opening in the jejunum so that the intestinal wall becomes flattened over the stoma with conversion of the openings into the jejunal loops into narrow slits. The opening proximal to the stoma permits food and water to circulate through the pylorus and duodenum into the stomach but both slits offer a valve-like hindrance to the egress of the gastric contents from the stomach via the anastomosis. The greater the distention of the gastric wall the more effective the valves become. The same phenomenon was demonstrated in the excised stomach by distending it with water.

In previous communications[1, 2, 3] the author has described a new method for making a gastro-jejunal anastomosis whereby the jejunum is incised transversely rather than longitudinally. The procedure introduces the principle of mechanical efficiency, a feature that should be a pre-requisite in all gastro-intestinal anastomoses. In contrast to the usual methods one avoids cutting the circular muscle fibres and accordingly there is no interference with peristalsis and no opportunity for the development of conditions that interfere with the efficiency of the motor mechanism of the stomach.

A comparative study of a series of experimental gastro-enterostomies with the usual longitudinal jejunal incision and with a transverse jejunal incision showed certain important differences. The operative technique, the size and site of the anastomotic openings were identical in the two series of operations. The functional results in the ten anastomoses with

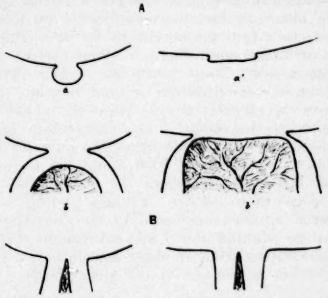

FIGURE II. A diagram showing the effect of extreme gastric dilatation on the stoma, A, in the usual side to side gastro-enterostomy (longitudinal jejunal incision), B, in the new type of procedure (transverse jejunal incision). The normal stoma is represented in the usual procedure in a, and b, cross section and longitudinal section respectively, and c represents a longitudinal section through the stoma after a gastroenterostomy with a transverse jejunal incision. The dilated stomach is represented in a', b' and c'; the mechanism of valve formation is illustrated in a' and b', while in c' the dilatation produces an enlargement of the stoma.

the transverse jejunal incision were uniformly good. Roentgenographic studies showed that the stomach usually began to empty immediately after feeding. The emptying time was never precipitous. The average emptying time (5½ hours) is approximately the same as that for normal dogs under similar conditions.

Finally, an examination *in situ* showed the anastomoses appearing much as they did upon completion of the operation. The stomach was never dilated. The loops of jejunum hung directly downwards in the ideal mechanical position. There was no atonicity, dilatation, kinking, or valve formation. The excised specimens showed patent lumina about the size of a cross section of the normal jejunum.

On the contrary, there were three poor results in ten anastomoses with the orthodox longitudinal jejunal incision. In the normally

functioning gastro-enterostomies the average emptying time was practically the same as in the other series. In the poorly functioning instances (3 in 10) there was marked evidence of gastric stasis. In two animals the obstruction progressively became more and more marked and was associated with vomiting and loss of weight. Fluoroscopic examinations, approximately six weeks after operation, showed that the stomachs were greatly dilated. They did not empty perceptibly after six hours and after three days marked gastric retention persisted. In these instances the stoma was much enlarged and the opposite intestinal wall was stretched and ballooned out in line with the gastric wall, beautifully illustrating the "valve" formation described by Cannon and Blake.

The loops of jejunum gravitated downward from either extremity of the dilated stoma with angulation of the gut at the ends of the anastomosis. In the third animal a less marked example of the same condition was observed. It is highly probable that the animals took too much food and water, thus producing gastric distention with a concomitant valvular obstruction. This condition once established tends to become more and more marked by accumulation of the gastro-duodenal secretions or by further ingestion of food and water.

I would like to emphasize that there were no adhesions or permanent kinks and that the obstruction could be attributed to only one factor, valve formation. These observations differ from those of Cannon and Blake who stated that such valves were not entirely responsible for their poor results but state that the occurrence of symptoms of the so-called vicious circle (gastric retention, vomiting, emaciation, etc.) were associated with kinks and demonstrable obstacles to the passage of chyme. They state that the intact circular muscle fibres are readily capable of straightening out sharp angulations in the intestine but emphasize that division of circular muscle fibres in the usual gastrojejunostomy (longitudinal jejunal incision) destroys the mechanism whereby peristalsis is effective in overcoming angulation at the distal end of the anastomosis.

Various modifications have been suggested to avoid the latter difficulty. Kelling believed that kinking was produced when the stoma was made too large and that stretching of the stomach would cause the projection of a spur of intestine into the gastric cavity. Case suggested that kinking might be prevented by attaching a few centimeters of jejunum to the stomach wall beyond the end of the anastomosis. However this danger is avoided with the transverse jejunal incision (Figure II).

The utilization of the transverse jejunal incision in making a gastro-enterostomy is not entirely new although the older methods fall far short of completely developing its possibilities. Mayo[5] stated: "In June, 1903, we began the method of Mikulicz, making the opening within three or four inches of the origin of the jejunum and using a transverse incision. We made forty-three by this method with four deaths, two of which could be fairly excluded. Four required a second operation at our hands, and to a large extent because we departed from the originator's technique. It came about this way: *The transverse intestinal incision limits the size of the opening to one-half the diameter of the intestine,** less about one-fourth inch suture line, and the opening could seldom be made larger than would admit the invaginated thumb. We tried to enlarge this by encroaching on the bowel, and caused a valve to form, which turned the bile into the stomach. These patients gave us a lot of trouble, the short upper limb of the loop made an ordinary entero-anastomosis of the two arms of the bowel impossible. We finally united the intestine each side of the opening in exactly the same manner as in the Finney operation at the pylorus. The result was good. This was our first experience with the short proximal loop; the cases which recovered after this method have remained in splendid condition, despite the small opening."

I have been unable to find the reference to Mikulicz's procedure, but assume that it is somewhat similar to the method of Kocher[6] which is illustrated in Figure III.

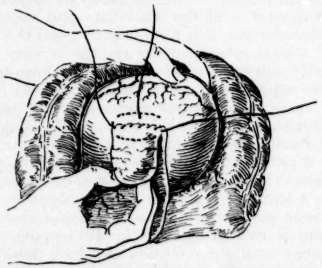

FIGURE III. Kocher's method for gastro-enterostomy with a transverse jejunal incision. "The jejunum has been sutured to the stomach. The center of the three threads represents the upper end of the suture uniting the jejunum and stomach in the vertical direction. The two lateral threads are the ends of the posterior serous suture of the anastomosis. The dotted lines on the stomach and intestine show the direction of the anastomotic opening, which is transverse to the long axis of the jejunum and equal to its diameter." (From Kocher, T.: Text-book of operative surgery, 1911, Vol. II, p. 575.)

According to the procedure mentioned by Mayo the size of the opening is limited to one-half the diameter of the jejunum, according to Kocher's method the length of the incision is equal to the diameter of the intestine, but in the method described in the present paper the length of the opening obtained with the transverse jejunal incision is practically *twice the diameter of the intestine* (about 2½ inches). The opening into each loop is approximately equal to the cross section of the jejunum which

*The italics are my own.

obviously is the maximum possible size of the *effective Lumen* in any type of anastomosis even though a longer longitudinal incision into the intestine gives a seemingly larger opening. Furthermore the longer the longitudinal jejunal incision the greater is the injury to the circular muscle fibres and consequently the interference with peristalsis is more marked.

The advantages of the transverse jejunal incision in the method presented are: The circular muscle fibres are not severed and accordingly the interference to peristalsis is minimal, the distal intestinal loop gravitates downward, without kinking into the optimum mechanical position. There is no tendency for distention of the stomach to produce a valvular obstruction but on the contrary it maintains the patency of the lumen.

CLINICAL APPLICATION

In a previous communication the immediate and early results following the clinical utilization of the transverse jejunal incision in making gastro-intestinal anastomoses were reported. The immediate results in the seventeen cases previously reported upon were eminently satisfactory. The functional efficiency of the anastomosis was studied by routine fluoroscopic examinations shortly before the patients were discharged from the hospital and at various intervals thereafter. In a discussion of the immediate post-operative roentgenograms, it is necessary to recall the fact, that a moderate six hour residue is very frequently observed after the standard posterior gastro-enterostomy. This usually persists for a few weeks and is not evident unless the patient is examined radiographically. Such clinically symptomless gastric stasis is not significant unless it persists for a prolonged period after operation. In this series of gastro-enterostomies with a transverse jejunal incision there was no six hour gastric residue in the immediate post-operative roentgenograms in 13 instances; in 8 there was slight retention and in 2 there was a marked gastric residue. In no instance did complications, suggesting a serious impairment of the motor mechanism, develop during convalescence. There was no six hour residue in any of twenty-one patients on whom an opportunity was had for making x-ray studies at intervals between 2 and 9 months after operation. Although the occurrence of symptoms of the so-called "vicious circle" has been largely prevented by the general adoption of the posterior non-loop method, not infrequently post-operative vomiting is a disturbing complication of the orthodox gastro-enterostomy (longitudinal jejunal incision). These sequelae have been attributed to a variety of factors including, improper placing of the stoma, adhesions, kinks or twists, long loops, etc., but it is quite probable that the valve formation observed experimentally *(vide supra)* is an important factor. The course of events may be that the stomach becomes distended with resulting partial valve formation and unless prompt relief is given by completely emptying the stomach this condition will tend to become progressively worse by the accumulation of normal secretions or by continued ingestion of food and water. There is clinical evidence of the correctness of this hypothesis in that the majority of such patients are relieved by gastric lavage which prevents further dilatation of the stomach until the normal muscle tonus is restored. One of the chief advantages of the transverse jejunal incision lies in the fact that gastric distention has no tendency to the formation of a valvular obstruction, but on the contrary maintains the patency of the stoma.

Later results are given in the accompanying table which includes all cases (thirteen) on whom follow up reports are available for a year or more following operation. Among these patients 10 have gone more than two years and 3 between one and two years. A study of the table shows that the results are generally excellent. This statement requires certain qualifications in the following patients: M. L. required a second operation (13 months after a gastro-enterostomy) for relief of partial obstruction at the anastomosis attributable to pressure by the mesocolon on the distal loop. This had occurred in spite of the fact that the mesocolon had been sutured to the gastric wall. It is probable that a few stitches cut through and allowed the mesocolon to drop and become attached to the jejunum. The line of adhesion to the intestine was freed and the mesocolon was resutured to the stomach wall. At the present time about 8 months after operation the patient is in good condition and the anastomosis is functioning perfectly. Another patient T. W. is incapacitated (information obtained by letter) but has no symptoms suggesting mechanical difficulty at the anastomosis. There are no gastro-intestinal symptoms but the patient suffers from rheumatism and has lost weight. A third patient M. D. complains of abdominal pain that is difficult to interpret. A physical examination shows nothing of significance and radiographic studies show that barium passes freely through the pylorus and stoma, there is no six hour residue and there is no evidence of a recurrent ulcer. The patient is suffering from the discomforts associated with artificial menopause. E. S. a patient with a gastric ulcer (a gastro-enterostomy was performed as her general condition contra-indicated a gastric resection) in a large ptotic stomach suffers from weakness and a heavy feeling in her epigastrium. It is probable that a resection of the ulcer would give relief. A. R. a patient on whom a gastric resection was performed for carcinoma, died two and one-third years after operation as a result of occlusion of the common bile and pancreatic ducts by a recurrence of the neoplasm. The re-

maining patients have all been greatly relieved of their symptoms and are in excellent condition.*

SUMMARY

The faulty mechanics in gastro-intestinal anastomoses made according to the usual methods are inherent in the longitudinal jejunal incision. This incision severs the circular muscle fibres throughout the length of the stoma with consequent interference with peristalsis and the development of conditions impairing the efficiency of the anastomosis. In certain instances dilatation of the stomach leads to the formation of a valvular obstruction at the anastomosis.

These short-comings have been obviated by the utilization of a transverse jejunal incision in making gastro-intestinal anastomoses. After this procedure the jejunal loops naturally gravitate downwards in a "trouser leg" shape which is the optimum position for maintenance of the patency of the intestinal lumen. The same tendency after gastro-enterostomies with the usual longitudinal jejunal incision may tend to kink and partly occlude the lumen.

The transverse jejunal incision has been used in simple posterior gastro-enterostomies and in operations of the Billroth II and Polya types. The results in properly selected cases have been excellent.

*I am greatly indebted to Dr. John S. Dye of Waterbury, Conn., for a letter referring to seven patients on whom he has performed gastro-enterostomies with the transverse incision according to the method described in this paper. He states that all of his cases have done exceptionally well and have been remarkably free of any severe post-operative vomiting. The operations extend over a period of from four months to a year. The patients have all gained weight, varying from 15 to 45 pounds.

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MELANOTIC SARCOMA OF THE SMALL INTESTINE*

BY F. B. LUND, M.D.†

THE following case is reported on account of the rarity of double tumor with double intussusception of the small intestine and the extreme rarity of melanotic sarcoma of the intestine.

P. F. 50 years of age, a laborer, admitted to the Carney Hospital March 28, 1929. This history states that he was well until six weeks before entrance, when he began to have a sharp pain in the pit of his stomach lasting about twenty minutes. Three or four days later he had another similar attack and another on the following day. Since then, the pain has occurred daily and for the past week has been almost continuous and is localized in the pit of the stomach. The pain is aggravated by taking liquids. For the last six weeks he has been unable to eat solid food. He vomited six weeks ago and again yesterday. His bowels have been extremely constipated since the beginning of the attack and he has had considerable flatulence. He has lost twenty-five to thirty pounds in the last four months. On examination, he was very pale, emaciated, and the most noticeable thing about the physical examination was peristalsis visible through the thin abdominal wall, though no sausage-shaped tumors were felt. The mucous membranes were pale. He had a systolic murmur, heard in the fifth interspace. He did not vomit in the hospital except when taking solid food. When he lived on liquids he did not vomit, although he had occasional attacks of generalized pain in the abdomen. His blood showed anemia. Red blood corpuscles 3,500,000; white 9,200; Hgb. 60%. The smear showed polynuclears 65%; large lymphocytes 8%; small lymphocytes 27%; moderate achromia. Stool examination for blood was negative. Urine showed many fine granular and hyalin casts and few red blood cells. X-ray examination showed the delay of food in the small intestines. Of these, I will show slides. The twenty-four hour film showed that the head of the column of barium had reached the sigmoid. The cecum showed an annular filling defect, involving three or four inches, and another defect was thought to be seen in the first portion of the descending colon. Diagnosis, probable carcinoma of the large bowel.

I did an exploratory laparotomy on April 3. Median incision. Nothing abnormal felt or seen about ascending or descending colon. There was an intussusception one and one-half feet long in the lower part of the ileum. This was easily reduced and a tumor the size of an English walnut attached to the wall of the small intestine and filling the lumen was resected and an end to end anastomosis was made with an inner layer of continuous Connell sutures and an outer layer of Cushing sutures with No. 2 catgut. On further exploration, a second intussusception was found in the upper part of the ileum about one foot in length with a large tumor at its base which was resected in a similar manner. A soft tumor was also felt over the pancreas, apparently retroperitoneal. It was not seen, as it would have required an extension of the abdominal incision, which was not advisable on account of the amount of operating that had already been done. The operation took fifty minutes. His recovery from the operation was good. His bowels moved in due time. His sutures were removed on April 17 and his general condition improved in some respects, but he still continued weak and ill. About May 11 he had some swelling of the legs, and on May 18 he was taken home against advice. He died at home about six weeks after leaving the hospital and there was no autopsy. The pathological report on the tumor to the great surprise of Dr. Mallory and myself was melanotic sarcoma. After we got this report of course we looked him over very carefully to see if there were any pigmented moles on his skin, and his eyes were carefully examined by Dr. Hurley and showed no primary growth, and in fact

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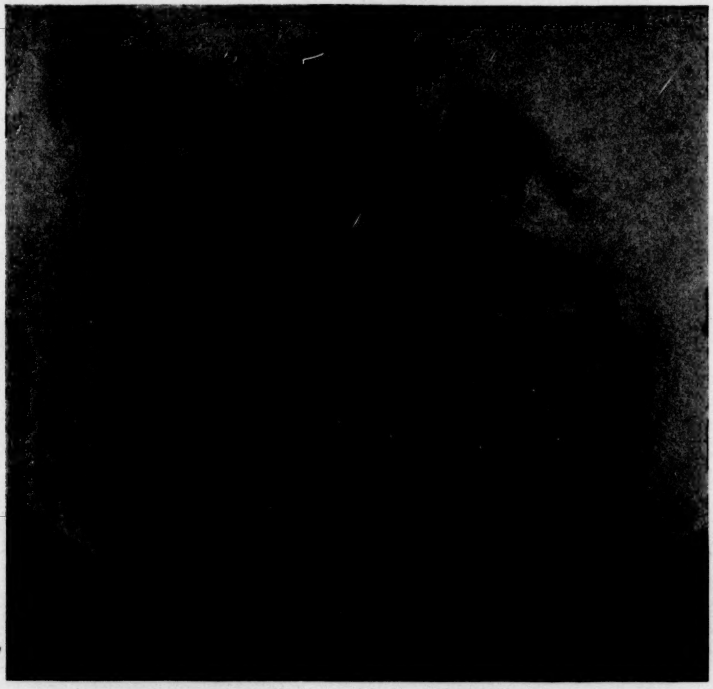
Case	Age Sex	Duration of Symptoms	Operation: Findings	Operation: Procedure	Post-operative Results: Immediate	Post-operative Results: First Year	Post-operative Results: 1-3 Years	Remarks
M. C.	36 M	8 yr.	Duodenal ulcer with almost complete cicatricial stenosis of pylorus.	4-28-26. Posterior gastro-enterostomy with transverse jejunal incision.	No nausea or vomiting. X-ray, 5-21-26. Very slight 6 hr. retention. Discharged 27 days after operation.	12-3-26, 6 mos. after operation. Has gained 50 lbs. Symptoms relieved. No 6 hr. stasis.	4-23-29. About 3 yrs. after operation - general condition good. Appetite good. No gastro-intestinal symptoms.	The patient has some abdominal discomfort if he is not careful of his diet.
C. R.	67 M	10 yr.	Duodenal ulcer with recent hemorrhage. Duodenum fixed to under surface of liver by dense adhesions.	6-12-26. Posterior gastro-enterostomy with transverse jejunal incision.	The patient vomited several times on day following operation. Gastric lavage gave complete relief. X-ray, 6-25-26. Very slight 6 hr. stasis. Discharged 17 days after operation.	11-29-26. 5½ mos. after operation condition good. Relief from symptoms. X-ray: no 6 hr. stasis.	5-2-29. About 3 yrs. after operation general condition good. No gastro-intestinal symptoms. Eats everything. X-rays. Gastro-enterostomy functioning satisfactorily.	Excellent condition.
F. B.	33 M	1 mo.	Probable perforated duodenal ulcer. Adhesions with fixation of duodenum to under surface of liver.	2-3-27. Posterior gastro-enterostomy with transverse jejunal incision.	Slight vomiting on 2nd and 3rd days. No further nausea or vomiting following gastric lavage. X-ray: No retention after 6 hrs. Discharged 20 days after operation.	9 mos. after operation, condition good. Feels much better. Sensitive spot in epigastrium. X-ray, 9-16-27. No tenderness over stoma. No 6 hr. retention.	6-12-29. 2 1/3 years after operation, general condition good. No gastro-intestinal symptoms.	Excellent condition.
T. W.	52 M	4 yr.	Duodenal ulcer with partial cicatricial stenosis.	2-9-27. Posterior gastro-enterostomy with transverse jejunal incision.	The patient vomited small amounts off and on throughout his stay in the hospital. No discomfort. Taking soft diet. 3-2-27. X-ray shows considerable 6 hr. retention. Discharged 23 days after operation.	7½ mos. after operation. The patient has moved to another city. A follow-up letter stated that he was feeling well and did not complain of gastric symptoms.	6-4-29. 2 1/3 years after operation: A reply to a follow-up letter states that the patient is incapacitated. He has no abdominal pains, nausea or vomiting. He suffers from rheumatism.	The patient has lost weight and strength very markedly. It is possible that he has developed a malignant neoplasm.
H.L.B.	45 M	4 yr.	Cicatricial pyloric stenosis with duodenal ulcer.	4-13-27. Posterior gastro-enterostomy with transverse jejunal incision.	No nausea or vomiting, complete relief from symptoms. No X-rays. Discharged 21 days after operation.	9-12-27. 5 mos. after operation. Complete relief of symptoms. Has gained 15 lbs. No 6 hr. retention.	6-10-29. 2 1/6 years after operation. General condition good. Eats almost everything No gastro-intestinal symptoms.	Excellent condition.
P. L.	60 M	2 yr.	Perforated duodenal ulcer. Fibrous and fibrinous adhesions between duodenum and liver.	5-10-27. Posterior gastro-enterostomy with transverse jejunal incision.	Vomited small amounts 1st and 2nd days. No further vomiting following gastric lavage. X-ray: 5-21-27. Very slight retention after 6 hrs. Discharged 20 days after operation.	2½ mos. after operation, condition good. Symptoms relieved. Has gained weight. No 6 hr. residue.	6-12-29. 2 1/12 years after operation, general condition good. No gastro-intestinal symptoms.	Excellent condition.
M. M.	52 M	20 yr.	Duodenal ulcer with cicatricial stenosis of pylorus.	7-26-27. Posterior gastro-enterostomy with transverse jejunal incision.	No nausea or vomiting. 8-15-27 X-ray: slight 6 hr. stasis. No gastric symptoms. Discharged 20 days after operation.	5½ mos. after operation, condition good. Symptoms relieved. Gained 20 lbs. No 6 hr. residue.	6-14-29. 2 5/6 years after operation, condition good. No gastro-intestinal symptoms.	Excellent condition.
M. L.	48 M	20 yr.	Duodenal ulcer with cicatricial stenosis of pylorus. Complete occlusion.	8-2-27. Posterior gastro-enterostomy with transverse jejunal incision.	No nausea or vomiting. Complete relief of symptoms. 8-19-27 X-ray: some 6 hr. residue. Discharged 17 days after operation.	5 mos. after operation, condition good. Symptoms relieved. Gained 30 lbs. No 6 hr. residue.	5-23-29. 1¾ years after gastro-enterostomy - 8 mos. after second operation.* Entered hospital with acute alcoholism. On recovery, X-ray showed normally functioning stoma. No G. I. symptoms prior to acute episode. General condition good.	Excellent condition.
M. D.	26 F	2 mo.	Duodenum adherent to liver. Probably duodenal ulcer.	8-3-27. Posterior gastro-enterostomy with transverse jejunal incision.	Slight vomiting for 3 days. Relief after gastric lavage. 8-26-27 X-ray: some 6 hr. residue. Discharged 23 days following operation.	5 mos. after operation. Has vomited occasionally. No pain. General condition good. No 6 hr. residue.	12-10-28. 1 1/3 years after operation. Condition good. Artificial menopause followed pelvic operation prior to gastro-enterostomy. Complains of some abdominal pains. X-ray. Gastro-enterostomy and pylorus functioning. No 6 hr. stasis. No evidence of recurrent ulcer.	Probable that some of her trouble is associated with artificial menopause.

* Patient entered hospital complaining of pain, loss of weight and some vomiting for two weeks. Signs of gastric obstructions. 8-30-28. Exploratory laparotomy. Meso-colon found adherent to distal loop of jejunum and producing partial adhesion. The meso-colon was freed and resutured to stomach and stoma.

GASTRIC ULCERS

Case	Age Sex	Duration of Symptoms	Operation: Findings	Operation: Procedure	Post-operative Results: Immediate	Post-operative Results: First Year	Post-operative Results: 1-3 Years	Remarks
C. A.	52 M	8 yr.	Gastric ulcer. Posterior wall and duodenal ulcer with partial pyloric stenosis.	3-24-26. Partial gastrectomy. Posterior gastro-enterostomy with transverse jejunal incision (Type Billroth II)	No nausea or vomiting. Condition good. X-ray, 4-9-26: slight 6 hr. stasis. Discharged 16 days after operation.	12-4-26. 8 mos. after operation. Symptoms relieved. Gained in weight. X-ray: No 6 hr. stasis.	6-12-29. 3 1/4 years after operation. General condition good. No gastro-intestinal symptoms. Eats almost everything.	Excellent condition.
E. S.	44 F	Several years	Ulcer in pyloric portion of stomach with partial pyloric stenosis. Marked gastroptosis.	1-28-27. Posterior gastro-enterostomy with transverse jejunal incision. Patient's condition precluded a resection	No nausea or vomiting. 2-16-27, X-ray: Considerable stasis after 6 hr. Discharged 19 days following operation.	3-19-27. General condition good. No untoward symptoms. 9-13-27, 8½ mos. after operation. General condition good. Occasional slight distention. No nausea or vomiting. X-ray: No 6 hr. residue.	4-23-29. 2 1/2 years after operation. General condition unchanged. Feels weak. Heavy feeling in epigastrium. X-rays show that stomach empties largely through pylorus.	Patient should probably have a resection of the ulcer. General condition contraindicated radical procedure at time of operation.
					GASTRIC CARCINOMAS			
A. R.	67 F	5 yr.	Carcinoma of pyloric portion of stomach with partial pyloric occlusion	10-21-26. Partial gastrectomy. Posterior gastro-enterostomy with transverse jejunal incision. (Retrocolic Polya)	No nausea or vomiting. 11-10-26, X-ray: No 6 hr. residue. Discharged 21 days after operation.	3-29-27, 6 mos. after operation; no evidence of recurrence. X-ray: No 6 hr. residue.	2-13-29. Patient died 2 1/3 years after operation. Relieved of gastro-intestinal symptoms until terminal stages of disease.	The autopsy findings were a recurrence of the carcinoma with occlusion of common bile and pancreatic ducts. The recurrent neoplasm was largely extra-gastric. There was extension of the growth along the lesser curvature with partial occlusion of anastomosis.
L. S.	67 F	6 yrs.	Carcinoma of lesser curvature with metastases to neighboring lymph nodes.	6-19-28. Partial gastrectomy. Posterior gastro-enterostomy with transverse jejunal incision. (Retrocolic Polya)	The patient vomited a small amount immediately after operation. Convalescence otherwise uneventful. X-rays showed: No 6 hr. residue. Discharged 29 days after operation.	6-12-29. About one year after operation. General condition good. Weight stationary. Complains of slight indigestion and gaseous eructations. No evidence recurrence.		Excellent condition.



X-ray showing obstruction in the small intestine in Case I.

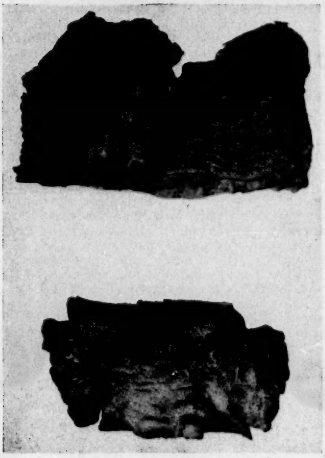


FIG. 1. Tumors removed from Case I by double resection.

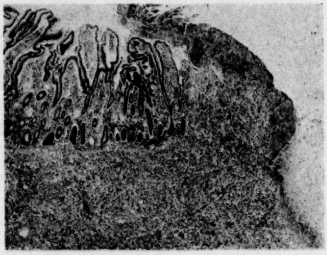


FIG. 2. Low power of tumor in Case I.

the eyes were negative. Dr. Mallory stated that he had never seen melanotic sarcoma of the small intestine except secondary to tumors of the skin or of the retina. Whether these tumors were secondary to the tumor which I felt over the pancreas and probably involving it, is of course a question. It is a great pity that no autopsy was obtained, but at any rate the extreme rarity of melanotic sarcoma obstructing the small intestine makes the case worth reporting. The intussusceptions which almost invariably occur in tumors of the small intestine are of course the result of peristalsis of the intestine in the effort to pass the tumor along as it would

other intestinal contents. The resulting hypertrophy and dilatation is always surprising to see and renders the operation of resection quite easy.

It happened that about this time, in the Pathological Department, I saw some specimens of extensive melanotic sarcoma of the mesentery of the small intestine, liver and other abdominal organs, that had been removed from a patient who had died on the service of Dr. Edward N. Libby at the City Hospital, and he kindly placed

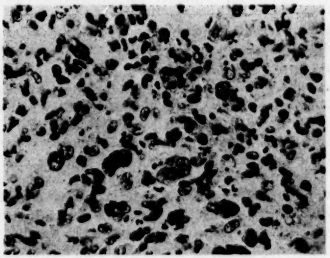


FIG. 3. High power of tumor in Case I.

the report of the case at my disposal and allowed me to have a couple of lantern slides made, which I am able to show.

The patient was a woman of fifty-three who had had her right eye removed eight years ago following an accident in which she fell and struck her eye against the key in the door, requiring immediate enucleation. This operation was done in Scotland and whether there was a melanotic sarcoma in the eye, we do not know. Her present illness began

FIG. 4. Small intestine in Case II showing melanotic metastases in mesentery.

eight months before entrance with a dull, non-radiating pain under the right costal margin, attended by loss of weight and appetite, frequent vomiting, and finally jaundice. Enlargement of the abdomen followed and she gradually grew weaker in the hospital and finally died. Her abdomen on entrance to the hospital was distended and tense and showed numerous dilated veins and evidence of free fluid.

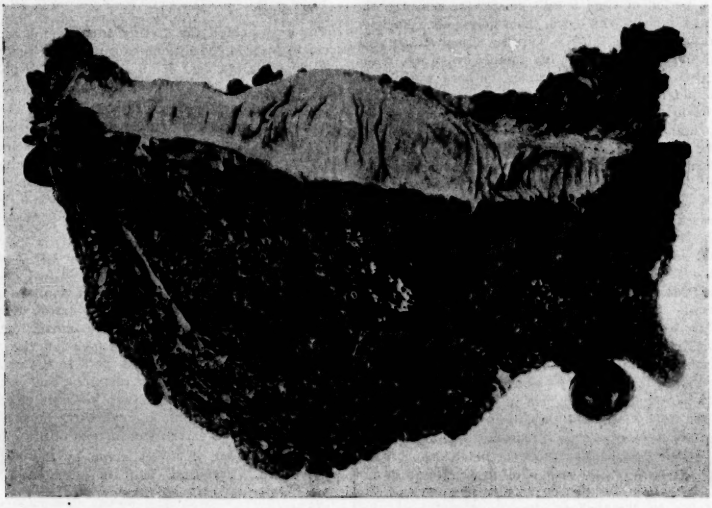


FIG. 5. Large intestine in Case II showing melanosarcoma in mesentery.

A hard, irregular mass was felt in the epigastrium. There was edema of the extremities. Considerable fluid was drawn off from the abdomen, but she gradually grew weaker and died in nine days.

Autopsy showed the peritoneum, omentum and all the abdominal organs studded with black pigmented areas. The heart showed black nodules on the epicardium and on the surface of the left auricle. The nodes at the hilum of the lungs were enlarged and black in color. The pancreas showed numerous discrete black nodules. The liver, kidneys, bladder and genital organs were filled with black nodules. Anatomic Diagnosis was: 1. Melanotic Sarcoma with universal metastases. 2. Absence of right eye. 3. Ascites. 4. Edema of legs. 5. Caput Medusae. 6. Chronic cholecystitis with cholelithiasis.

In this case I presume it is fair to suppose a tumor of the right eye was the primary source of the sarcoma. I should imagine that the history of the second case would be more typical of the average course of metastases in melanotic sarcoma. In this last case, although the mesentery was infiltrated, as you see in the picture, there was at no time any intra-intestinal growth.

FATIGUE—HEALTHY AND UNHEALTHY

BY ELIZABETH COLE

Every healthy person really likes to be active. Energy is constantly being produced in the body and must be expended. Nothing is more pleasant than the realization that a good job has been well accomplished and the normal fatigue that was thereby induced will disappear with a refreshing night's sleep.

It is only when the body and mind are overworked over a prolonged period of time that the dangerous sort of fatigue results. This is a chronic fatigue which creates poisons in the body and renders it susceptible to serious sicknesses. Fatigue is due to a chemical waste that circulates in the blood. Scientists have shown that certain chemical fatigue substances, when injected into animals, produce all the symptoms of fatigue. A tired person is a poisoned person. As long as there is a balance of rest, during which time the blood has a chance to purify itself (and nature has arranged for this), all is well. But when this chemical poisoning is allowed to continue for a period of time it will poison the muscles, the brain, the heart, the blood, the whole body. Fatigue, therefore, may be called a warning signal and is really nature's way of protecting against overwork. When sleep will not refresh and when the hard working or hard playing man or woman can no longer awaken in the morning ready and eager to take on new duties, then is the sign that chronic fatigue is setting in.

The symptoms of fatigue may be either physical or mental or both. For example, it has been found from experiments performed on animals that the nerve leading to certain muscles will be exhausted although the muscle will be able to work perfectly. When this happens there is a lack of co-ördination, a very serious situation in certain forms of industry. The working man whose brain and muscles do not work in harmony is in danger of sustaining a severe accident. This is especially true in running machinery which demands mental as well as muscular action.

Heavy physical work can be done more efficiently by comparatively younger men. Chronic fatigue is bound to attack the older men in such groups as coal miners, iron, steel, and tinplate workers sooner or later and this creates an industrial problem that may well be faced. Naturally the older the man becomes the more wages he should be worth and is entitled to, yet the fatigued man from 40 to 50 will undoubtedly be scrapped at the age period when he should be feeling more settled in life. In time it may be possible for these men to learn an alternate trade and then the problem of chronic fatigue can be abolished in these trades.

In thinking about fatigue it is interesting to note that experiments performed on dogs have shown that diet greatly influences their susceptibility to fatigue. Dogs at Cornell Clinic in New York City were made to run on revolving platforms. When they had run for one mile, they were allowed to rest for one hour. This was repeated until they had run four miles. When they had been fed on carbohydrates and fats they could run on their reserve strength over a period of 28 days with no food, only water. They were exercising at the expense of their body fat and the fatter ones could run much better than the excessively thin ones.

Athletes training for races have also been fed on different diets to find out which kinds of foods gave them the longest endurance. The carbohydrates were used up first while the fats were more slowly absorbed. Long standing fatigue cannot be helped except temporarily by food, but a physically tired person often can be pepped up for the time being by taking sugar.

The present fad for dieting then would certainly seem to be a foolhardy one to pursue for the person who does a great deal of muscular work or play. It is foolhardy anyway without the doctor's orders.

While fatigue is seldom a direct cause of death its presence brings about a rundown condition that may lead to frequent colds, grippe, and sometimes to more serious illness. Fatigue is also a common symptom of tuberculosis and is regarded by the physician as one of the early danger signals of that disease. This fatigue, however, is not the same as that which is the result of overwork.

To combat fatigue doctors urge the use of soundproof devices, modern improvements in factories and work shops, and mechanical fatigue abolishers, but above all they urge the intelligent pursuit of health habits, the most important of which is sufficient rest. Take time out once in a while to relax the whole body, open the windows, take a walk in the sunshine during your noon hour, eat nourishing and well balanced meals, stop worrying, keep yourself physically fit by consulting your doctor regularly once a year before sickness can attack you instead of after it has.

This is the sort of advice given by the National Tuberculosis Association and its affiliated associations in their educational campaign to prevent such sickness forerunners as fatigue. Their work is supported by the penny Christmas seals sold this month.

THE NEW HAMPSHIRE MEDICAL SOCIETY

THE RESPONSIBILITY OF THE MEDICAL PROFESSION TO THE CITIZENS OF THE STATE*

BY HENRY H. AMSDEN, M.D.†

THE last generation has witnessed some marvelous advances in the art and science of medicine, in our knowledge of the causes, cure and prevention of disease. Equally significant, if less spectacular changes have taken place in the social and economic side of medicine and the purpose of this paper is to discuss one feature of this situation, the shortage of physicians in some rural sections of the state.

That there are many towns in New Hampshire which are without physicians now which were well supplied with doctors a generation ago, is well known. The causes of this situation may be stated as (a) educational and (b) social and economic.

(A) EDUCATIONAL

Fifty years ago the graduate in medicine often derived a large part of his professional experience from a preceptor. He accompanied him on his rounds, assisted him in operations, and got much of his medical training in the field, so to speak; and when he came to choose a location often settled in his home town or in some small place. Many of our New Hampshire doctors were graduates from Dartmouth College Medical School during the 125 years of its existence as a full time school.

The graduate in medicine today is a product of the clinic, the medical school, the laboratory and the hospital; he gains his professional experience by his contacts in these institutions. He is trained in the use of instruments of precision, in the diagnosis and treatment of disease and he is unwilling to practice his profession where he cannot avail himself of these facilities. He settles in a city or large town where he can get hospital and laboratory contacts, and with the increasing tendency to specialization he often looks on general practice as a mere stepping stone to a more interesting and lucrative field of special medicine.

(B) SOCIAL AND ECONOMIC

The urban drift of population today is an important factor in the life of our country, and the medical man tends to follow this line. He sees the country church losing in members and influence; the district school closed and its pupils transported to the nearest large center; he sees the trend of population away from many of our rural districts, and he cannot visualize settling there for his life's work, perhaps bringing up a family under such conditions. The older doctor sees the same drift. He has grown old in service; he has seen his colleagues fall out of the ranks or possibly remove to some nearby town or city; and with advancing years and failing strength, he is called on for a larger share of work. He sees his best patients send in town for a doctor, or motor in to consult him there, leaving the night calls and the work, when the roads are impassable in Spring and Winter to the home doctor. It is no wonder that he follows the trend of population or else retires from practice.

EXTENT OF SHORTAGE

As a basis of comparison, I have taken the reports of the Board of Registration in medicine for the years 1899 and 1928, and the New Hampshire Register for the latter year, covering practically a generation. The figures presented are, of course, not accurate, because of almost daily changes in personnel, but are sufficiently so for purposes of comparison.

In 1899 there were 731 physicians registered as located in New Hampshire; in 1928—541; a loss of 190 or 26 per cent. In 1899 there were 157 towns with resident physicians. In 1928—115, a loss of 42 or 26 per cent. The largest percentage of loss in towns is in Sullivan County, 7 out of 12 or 58 per cent.; and the largest per cent. of loss in doctors is in Strafford County, 41 out of 83, or 49 per cent. There are 21 towns in the state at present in which all the physicians are 60 years old or over; and 11 towns in which every other physician, or one out of two, is 60 or over. It is obvious that the next ten years will see a further depletion of the resident medical men in these towns, unless something can be done to induce young men to settle there.

The maps illustrate in a graphic way the situation. The white stickers show the location of doctors in 1899 and 1928, the red ones those which have lost physicians in that period.

ITS IMPORTANCE

The average doctor is an individualist. He sees life in the terms of his individual patients and the practice of medicine is a sufficiently absorbing occupation so that he fails too often to see the obligations to society, of the profession as a whole. Sometimes it is well to take account of stock, so to speak, and see where we stand

*Read at the Annual Meeting of the New Hampshire Medical Society at Manchester, May 28, 1929.

†Amsden—Ear, Nose and Throat Surgeon, Margaret Pillsbury General Hospital and New Hampshire Memorial Hospital. For record and address of author see "This Week's Issue," page 1193.

or where we are drifting. We cannot escape the fact that upon the shoulders of the organized medical profession rests the responsibility of the health of society in general, just as the church is responsible for its moral and spiritual welfare, and the legal profession for law and order in court procedure.

Due largely to the efforts of the American Medical Association, the standards of medical education and incidentally the cost of the same have risen so much in the last two decades as to diminish materially the output of doctors, and also, shall we say, to discourage the recent graduate from settling in the small town or country district.

Now society holds the organized profession responsible in the last analysis, to furnish medical service, and if we fail to do so, it is inevitable that this function will be taken over in some way by non-medical organizations, either lay or governmental, which followed to a logical conclusion means the socialization of medicine to a greater or less extent.

The various efforts which have been made to subsidize doctors to settle in particular localities either by offering medical scholarships or cash bonuses, point definitely in this direction and so far such measures have almost invariably failed.

Another element has entered into the situation during the last generation, the growth of public health nursing.

The gold stars show the location and number of public health nurses including District, School, Red Cross, Tuberculosis, Maternity and Industrial nurses. The public health nurse represents one of the outstanding achievements of preventive medicine. She has come to stay, and the whole movement will probably increase rather than diminish in the future.

But we of the medical profession, cannot escape the conclusion that there is some significance in the fact that whereas there are practically 200 less doctors in the state than there were 30 years ago, there are now 125 public health nurses who were not functioning at that time. I do not mean to imply that the doctor has gone out because the nurse has come in, or vice versa, but there is some relation between these two sets of figures, if not necessarily a causal one.

I know from personal acquaintance with many of these nurses that they are working strictly along the lines of preventive medicine, and are co-öperating with the medical profession, but it is perfectly inevitable that where once there was a doctor and now there is a public health nurse, that the nurse will be called on to do some of the work which the doctor used to do.

A striking example of this occurred during the "flu" epidemic in Grafton County where two nurses were sent to relieve an emergency, and this same thing is bound to occur increasingly unless some means can be devised to provide medical service for these localities now without resident medical men.

It has been said that with automobiles and good roads, the medical needs of the rural districts can be supplied by doctors living in adjacent cities and large towns. This is true to a certain extent in summer, much less so in winter.

But medical service implies something deeper seated and more important than this. Consider the doctor in the small town. He is the physician and the friend to the community. He may be health officer, member of the Board of Health, member of the School Committee, public library trustee, selectman, town clerk or town treasurer, a tax payer and a citizen, as much a part of the community life as the minister, the school teacher or the storekeeper. He occupies a place in the community which no non-resident medical service, no matter how prompt or efficient, can ever fill.

The practical question is, what are we going to do about it? It is evident that the medical profession cannot alter social or economic conditions which have a bearing on the problem, nor can we change educational standards or requirements; that must come about, if at all, through the medical schools.

We can, however, suggest a remedy which may meet in some degree the medical needs of the communities under consideration and provide a more congenial environment for the recent graduate in medicine, by formulating plans for the establishment of community or regional hospitals, at strategic points throughout the state. It is obvious that those sections which are now supplied with hospitals have adequate medical personnel to man them and with the growing tendency for the sick to seek hospitalization for medical, surgical or obstetrical care, the medical needs of the state would be more adequately provided for. The plan contemplates the formation of districts composed of adjoining towns in the same way that supervisory districts are provided for educational purposes. A community hospital would be established at some central point, which would be a health center which would serve the medical needs of the section, and from which the public health activities could be supervised. It might be feasible to employ a doctor trained in public health work who would be supervisor of health matters, in the same way which the district superintendents supervise the schools, and all this could be done without interfering in the work of established public health organizations.

I would recommend that this society sponsor an enabling act for the next legislature, to provide for the formation of health districts by groups of towns, to build and maintain hospitals and to provide such personnel and equipment as may be necessary for their efficient functioning, that the various county societies make this a subject of discussion and considera

tion, and that the State Society seek the coöperation of the Grange and other civic and fraternal organizations to further the plans outlined.

Discussion

Dr. Ralph W. Tuttle, Alton: I want to take issue a little with what Doctor Flanders of Dover said. I think this man in Vermont that he referred to has already achieved the inferiority complex. A scout for one of the big league teams found a man out West who was a wonderful batter and telegraphed to the team manager about him but he said the man had an inferiority complex; and the manager telegraphed back, "Send him on, I don't care what kind of a car he drives." I never had a fear of any other man turning me down but I have been welcome to practise in the Laconia Hospital, the Concord Hospital and other hospitals. So I know that isn't true in New Hampshire and I practised a few years in Vermont and didn't find it so.

We have listened with pleasure to the able paper presented by Dr. Amsden. It is especially gratifying to have him offer something in the way of a solution. As Mark Twain said about the weather, "It is the subject about which there is the most said and the least done." Heretofore that has been true about the ever present subject of rural medicine. Our present day quiet, comfortable, comparatively trouble-free automobile was not the child of any one man's brain. The man who invented the internal combustion engine is the real father of the automobile. Dr. Amsden may have today fathered a proposition which will be of greater benefit to the rural population than the automobile. The details will require a great deal of discussion and thought.

We have many hospitals in the state that are doing a truly wonderful work; in many instances they are so widely scattered that they cannot take care of all that need attention especially in the winter months when the roads are almost impassable for the well, to say nothing of the sick. Even with numerous hospitals strategically placed, we will still have the problem of the country doctor, to take care of Johnny with the croup, father with acute indigestion, and mother with a splitting headache, husband and five children clamoring for dinner, the weekly wash half done, and company coming for over-night; her only wish is that she might go to the hospital and get one good night's sleep, but that is obviously out of the question so it is up to the country doctor to rush out and patch her up so that she may go on.

The great danger from numerous small hospitals will be in the attitude of the doctors, who, on being connected with a hospital, will at once consider themselves specialists in all the diseases that flesh is heir to, and attempt to perform major operations for which they are not properly trained. If we could be sure that no one would attempt to go beyond his capabilities, then this danger would be obviated.

The section of the state I am trying to cover is fairly well supplied; there is no part of it more than twenty miles from a hospital, but some of those miles are awful. so the problem there is roads, and this is gradually being solved, especially in the winter with the snow plow In the spring there is too much solution in the roads, but that is being taken care of by the extension of state highways and the use of gravel.

When we accepted our degree of Doctor of Medicine we accepted something more than a chance to make a living. We took on our shoulders a responsibility to the citizens of the state and to the stranger within our gates. If our profession fails in its responsibility to the rural communities the migration to the larger centers will continue and our state will revert to the primeval forests, or worse still, we will be afflicted with state medicine.

Dr. Arthur T. Downing, Littleton: *Mr. President and Members of the Society*—This whole problem of physicians in the rural towns of New Hampshire is certainly an important problem, and it strikes me the figures make it look larger than it really is for in a large percentage of the rural towns of this State the changing situation has automatically brought about the present state of affairs. If you will analyze these small towns, you will find that they have no use for a physician for there is nothing there for him to do. I know that from personal experience. I had the pleasure of spending a few years in a crossroads town, and there is no town there now at all. It was quite a farming section and there were lumber mills, but the mills have gone and there will not be any lumber there again for generations, and there will be nothing to require a doctor.

And then what Dr. Flanders said about these men in Vermont—I was in touch with Dr. Flanders for two years and I don't think his attitude is right. I found Dr. Stokes and others in Rochester were willing to help the man in the crossroads town, and I went to them with my troubles—there was no telephone and no automobile then, and I was instrumental in getting the first telephone pay station there, and since then there has been a good road put in that connects it with Dover and Rochester, easily accessible to both places, and I expect the road will be kept open in the winter as in the summer. There is no call for a doctor there and there never will be.

Of course, the demands on time and money will preclude any young man from going into such a town as that, now or at any future time.

unless a group plans to serve a community comprising several towns.

The attempt to subsidize a man in that town will never go through. A subsidized man is always stigmatized from the first, and all the deadbeats and rounders will drop on him right off.

Since I have left the crossroads town I have seen the other side of the picture. I have been in a larger town with the outlying towns accessible. Some of those towns when I went there had two physicians and they have none now. The answer to that is what I said in the first place. Twenty years ago they had lumber mills and they brought in a population which stayed there, but the lumber is all gone and the farming isn't much. It is pretty near a summer community. One town had two physicians twenty years ago and then it had one and now it has none; and the population is migratory and they follow the tourist business. They have good roads which are kept open in the winter as well as in the summer. And the doctor in the small rural town—I found that true twenty-five years ago—recognizes the fact that he is not going to stay there, and later moves to the nearest large town, and the patients follow him; and those outlying towns are well taken care of by the physician in the larger town because he can get there in all seasons of the year. I think that is largely the solution of the problem.

DR. J. C. LAWLOR, Dover: I was extremely interested in Dr. Amsden's paper, and those maps are familiar to me, and those red lines show a tendency that we can't remedy by any missionary spirit.

Dr. Amsden stated that the cost of medical education was prohibitive and I am inclined to disagree with that statement. There are fewer medical schools, but the number of applicants is legion. In Harvard you will find that the applicants will be three times the number of men they can take in. So it isn't the cost that has kept men from medicine.

Dr. Amsden has stated that we can't alter economic conditions, but we can alter some things. We can alter medical conditions, we can bring to the man in the smaller towns certain medical privileges or relations which will make all the difference to him in maintaining his self-respect or otherwise losing it. I don't think you can get missionaries to go out and take a country practice because of the need of the country people for in going to a country practice a man is liable to lose his self-respect if he is unable to deliver the goods. Due to lack of time or money he is therefore going to lose his self-respect.

The third point of Dr. Amsden's paper was socialization of medicine and have the legislature step in—I must confess that my limited knowledge makes me look upon that with a great deal of hesitation. I should much prefer to see the natural trend which I think has appeared. I should like to see that natural trend develop; in other words, I should like to see individuals in the smaller towns grouping together to take care of their communities. In a smaller town no man can afford the apparatus, but if he gets into a group, they can avoid the duplication of time and travel and expense for apparatus. So I think the best thing isn't to allow the legislature to step in but to allow those men who like the country to go there in groups and retain their self-respect.

DR. FRED E. CLOW, Wolfeboro: Two years ago in the Hospital Number of the *Journal of the A. M. A.* Dr. Colwell, Secretary of the Council on Medical Education and Hospitals, called attention to the two States of the United States which had the best facilities for hospitals. Those two States were New Hampshire and Connecticut.

Before one would advocate having the State establish these hospitals or have the towns establish them I should like to have the communities establish them first. In my little community the people have come across with $24,000, and as long as that goes on I think it should be kept up. And in our little hospital we have 28 men as associates from near-by towns and from the State of Maine.

Another point Dr. Bowler suggested is the possible over-education of the medical student of today. I think that is true. The medical student is taught to do a cesarean section and to diagnose a spina bifida, etc., but when the patient is bilious the doctor says, "I am helpless."

There is a tendency on the part of medical educators to say that the man who goes into the country districts is a fool in the beginning to consider it.

A MEMBER: There is one phase of this subject which has not been brought out at all. It has been said that New Hampshire wasn't supposed to have any state medicine whatever, but state medicine does enter into the physician's practice. Twenty years ago the obstetrical nurse came into being. The State is now employing women as obstetrical nurses who go over the State and they confine the patients, and that class of case is being taken away from the country physician. Supposing the country physician is going to have a birth case, he reports that case, and the State Health Department sends the patient circulars on how to take care of that baby and how to feed that baby, etc.

Is the country practitioner allowed to do this? No. It is taken away from him by the State. Years ago the country practitioner was supposed to take care of his tuberculosis cases. Is that so at the present time? No. The State is supposed to have those cases given over to it. I mention these things not to deprecate them but

to show that the tendency is to take things away from the country physician.

A MEMBER: I didn't suppose for a moment that so much was to be said. I practised for years in a country village where there is a surrounding country. So I had a taste of country practice. Since this matter has come up of the lack of physicians in the country towns I find that the city man is worried more about it than the country man is. The great trouble is that there are no people there. The tendency has been to leave the farms and go to the larger communities. When I first went to this town to which I refer, there were three neighborhoods outside where a man could practise medicine and do well financially among farmers who were very appreciative, who recognized his ability and was considerate of him—a mighty fine class of people—and I enjoyed working for them; but they are gone—maybe I had something to do with it. They are gone as the Frenchman said who had parked his boat in the St. Lawrence River and came back to find no boat there.

I believe there are three things brought out today—three ideas that appeal to me. The first thing is roads—that is a basic thing for the State of New Hampshire medically and non-medically. There has been a lot of money expended, and we have not many good roads. Take a ride from here to Florida and you will know when you are in New Hampshire from the bumps you get. We medical men need to take more interest in politics to see where the money goes.

The next thing is the district nurse who has come to stay and is a great help in taking care of these cases in outlying districts. And the next thing is the hospitals. I have a son who is going to graduate from Dean Lewis's institution. If he should settle away from a hospital, I would go after him with a gun and shoot him back where there is a hospital. If he should have a case of a man who was wounded, he should be able to take him to a place where he can take care of him. So there are those three things.

DR. W. R. SANDERS, Derry: I think the people themselves are to blame for not having doctors in their communities. In Chester they used to have two doctors; now they have none. They send over to Derry and to other places. Yet the patient in Derry will go to Manchester. If the people won't hire the doctor and treat him fairly, the doctor will settle in a new community.

DR. HENRY H. AMSDEN, Concord (closing): The main object of my paper was to arouse discussion, and I am sure it has done so, and that was the main reason why it was presented.

A REVIEW OF ONE YEAR'S AUTOPSY SERVICE*

BY HOWARD N. KINGSFORD, M.D.†

THE object of this paper is to try to stimulate our profession and hospitals to get together and increase the number of post-mortem examinations. As you must realize post-mortems are the most important means of advancing our knowledge of disease and are necessary adjuncts to the completeness of each case study.

The educational value of the autopsy has to be considered in its relation to:

1. The Physician.
2. The Medical Student.
3. The Research Worker.
4. The Family.
5. The Community.
6. The Hospital.

Value to the physician: What finer stimulus could we have toward increasing the minuteness of investigation, accuracy of observation and case histories than to have these clinical impressions checked up by a post-mortem. It is by this means only that we are afforded opportunities of studying the earliest manifestations of disease, particularly in persons presumably healthy but killed by accident. There is also the normal appearance of various organs and tissues necessary to a recognition of morbid changes or slight variations from health. Anomalies may be found, anatomy reviewed, results of operative procedures noted. There is a clinical tendency of explaining away every physical sign and symptom on a single pathological basis; the autopsy is the potent factor in demonstrating the frequent multiplicity of lesions together with an interpretation of each.

Value to the medical student: Of course, we all know the value of the post-mortem to the medical student. There he obtains an objective, first-hand knowledge of the morbid processes caused by disease. Without the post-mortem a rational conception of the nature and course of the lesion cannot be acquired. He also acquires an anatomic picture which he correlates with his physical observations. Also an increasing accuracy in diagnosis, treatment, and prognosis is gained, to be used in contact with future cases. He has the mental picture formed at the autopsy and the added stimulus for keener interest.

Medical research of necessity depends on the autopsy for disclosures and stimulative effect

*Read before the Annual Meeting of the New Hampshire Medical Society, May 29, 1929.

†Kingsford—Medical Director and Professor of Pathology, Dartmouth Medical School. For record and address of author see "This Week's Issue," page 1173.

Definite problems and new methods of attack are continually presenting themselves and when carried out may result in great value to humanity.

Value to the family: It is important, and should be of interest to the family to know the cause of death. Knowing the cause of death may prevent needless difficulties and the possibility of litigation before the heirs and dependents may receive insurance. Careful and scientific examination is not contrary to the dictates of religion and ethical teachings.

Value to the community: The community profits by the increased efficiency afforded its medical men at autopsy. They are being educated to periodic health examinations, thereby detecting early faults in functions, locating focal infections, and acquiring a training in attention to personal hygiene. The necropsy records furnish the only means of connecting the now unreliable vital statistics largely vitiated by the inaccuracy of diagnoses entered as the cause of death on the records of both our hospitals and state boards of health. It may enable the authorities to take proper action to nip in the bud any incipient or threatened epidemic. It may refute any unwarranted scares of scandal that might injure the fair name of the locality and general prosperity.

Value to the hospital and hospital staff: A keener rivalry and increased desire for diagnostic acumen is created by the frequent opportunities for checking up one's clinical impressions and as one can easily see, there will be an improvement in morale and greater efficiency on all sides. Let us remember we are all students of medicine even to the last. These interests are so related that whatever helps one, at the same time helps others. The physician thus equipped, fares forth with a broader vision. He will be a better diagnostician and safer therapist and will gain a more exalted position in his community than his confrere who neglects such opportunities.

To understand and appreciate what the relationship should be between the medical staff and the hospital administration in the matter of obtaining autopsies, it is necessary to have particularly in mind just what part each should occupy in an ideal working organization. It must be admitted, I fear, that the average governing body and its executive officer have relatively little concern about the character of the medical work done in the hospital. The hospital is frequently not regarded primarily as a medical institution nor its administration as within the province of medicine. It will be a long time before all hospitals are, so to speak, medically administered. Hospital boards of trustees usually composed of laymen, and properly so, often fail to appreciate the viewpoint of the medical staff and concern themselves chiefly with the business aspects of the institutions for which they are responsible. The hospital executive too frequently is but a combination of office clerk and glorified housekeeper. On the other hand, the average medical staff is an unorganized and, indeed, not seldom, a disorganized group of persons, each concerned with his own personal interests or confining his efforts to his own restricted field. The members of the staff may be relatively less hostile to each other than they are to the administration. The ideal executive of a modern hospital must in fact be a medical director. The medical staff of a hospital should be a well organized group of men selected on the basis of their professional qualifications and their proven ability to work together. The percentage of autopsies is a very good index of the scientific attitude of a hospital staff and its efficiency as a professional organization. The success of hospital treatment is measured by the number of patients who go out alive and not by the number of deaths.

It is a very safe conjecture, however, that the patient who receives treatment in the hospital where every possible lesson is learned from each death that does occur, is decidedly more apt to go out alive and with his condition improved than the one who enters a hospital where autopsies are the exception rather than the rule.

A low percentage signifies that at least one is failing adequately to function. A high percentage means a good professional spirit and a scientific interest on the part of the staff. It means satisfactory treatment of patients. It indicates that consultations are frequent. It is assurance that slipshod methods are not tolerated, for a high percentage of autopsies cannot be continually maintained unless there are high standards of medical service all through the hospital. It is incumbent on the administration to see that no obstacles are placed in the way of securing autopsies. In case of doubt in any particular instance, there will seldom be criticism if the autopsy gets the benefit of the doubt.

A system as nearly fool proof as possible should be developed for the notification of visiting and house staff when deaths occur and when autopsies are scheduled.

The post-mortem examination will disclose the results of efforts to make careful, accurate diagnoses and reveals, in many cases, the actual effects of various methods of treatment. Unexpected conditions are often found in the post mortem examination, many of such importance that they may be the chief causes of death. The medical man of high standing is prompt to admit his mistakes. No matter how much he knows he always expects to learn and his very mistakes disclosed, win for him the respect and confidence of his colleagues in his professional ability. The proper use of the autopsy goes far in creating a scientific atmosphere in the institution and toward instilling a spirit of frankness in facing the facts. Inevitably there is a better professional feeling and an incentive to honest thinking and expression. How much more valuable

is a staff appointment in a hospital where such a spirit prevails than in one where there is little scientific interest in disease and where the autopsy, all too frequently, is regarded as only a means of exposing professional mistakes which might better be buried.

No matter how simple the case may be, there is no post-mortem examination without some value to someone.

The post-mortem examination is becoming less and less a revolting horror to the average layman. When the public, generally, understands the lessons learned from scientific medical investigations are for its own benefit, the opposition to the post-mortem will disappear. One of the greatest of human privileges is to teach. It is as true today as ever that "the dead teach the living". Let the hospitals and the medical profession see to it that the privileges of teaching in its fullest measure are accorded the dead and let us not be too ready to sign a death certificate, unless we are absolutely sure of the cause of death, and also remember that we will not get autopsies unless we ask for them.

From May 1, 1928 to May 1, 1929, we had at the Mary Hitchcock Hospital at Hanover, 68 deaths and 45 autopsies; 66.2%, which we think is a fairly good showing.

On account of time I will not be able to take up the discussion of these autopsies although each one had one or more interesting lesions. It was not difficult to obtain permission to perform the autopsies. The house doctor or physician in charge of the case obtains the permission. One patient asked for a post-mortem in case she died.

Three cases in which broken ribs were found had no early chest symptoms: one, the fractures not seen on x-ray, two not x-rayed.

One case, x-ray showed a bullet under left ear and the bullet was under the right ear.

Discussion

Dr. John F. Gile, Hanover: One of the most interesting features of the increased autopsy service which we have developed is the interest shown at Staff meetings in the discussion of the cases at these meetings.

The case histories are given in more or less detail, and Dr. Kingsford follows with a discussion of the autopsy findings and compares his findings with the clinical diagnosis. Most of the cases that come to autopsy have been seen by at least three men before death, so that there has already been considerable discussion as to just what the condition is. The members of the Staff are usually present at some time or other during the progress of nearly every autopsy. As a result there follows a very free discussion of every case with light thrown on the subject from both the medical, surgical, and pathological aspect. This gives an added stimulus at the meetings and after seeing some of the mistakes in diagnosis, or lack of sufficient diagnosis, it must truthfully be said that a large percentage of diagnoses are either not made or are made wrong. As has been said before, there is just one physician who never makes a wrong diagnosis and that is the one who never has an autopsy performed. A complete record by the pathologist and the microscopic findings and pathological diagnosis are filed with the history.

The value, therefore, of the autopsy I think no one will deny today. The increase which has taken place all over the country due to the efforts of the American College of Surgeons and the Council on Medical Education of the American Medical Association is an indication of what this service does and the part it plays in completing hospital records. It is an essential part of the whole hospital service. It is a part of the activities of the hospital which requires constant watching, as there is no way in the world of getting a goodly percentage except by making the attempt in every case. Everyone is certainly better satisfied by finding out exactly what the pathology is, in as high a percentage of cases as possible. If this policy is adhered to, autopsy percentages will rise from 10-15% to 30, 50, 60 and 70%, and more scientific data will be added to our present knowledge.

At the present time a hospital approved for interneship must have 15% of its deaths autopsied, and this percentage is in force until January 1930: 10% was the number required up to a year ago.

Up to five years ago the number of autopsies we obtained was negligible, only an occasional medico-legal case being done. The percentage started to rise sharply until it reached 20%. At this time we adopted the policy of obtaining a signed refusal or permission for autopsy on all cases. The percentage went up again so that two years ago it was 37%, and then it has nearly doubled in the last year.

There is apparently not the general feeling against autopsies that others and ourselves have tried to believe when we used to try to defend our low percentages. As our own increase shows, it is simply a question of asking permission. Occasionally we are requested to perform the autopsy. Twice in the last year autopsies have been done on patients dying outside the hospital, and these, of course, are not included in our statistics.

Finally, I think it may be said that as a result of the broader knowledge obtained, not only is more skill acquired in diagnosis, but newer methods of diagnosis and treatment are found which will help us in relieving and curing other cases.

Dr. Charles Duncan, Concord: I will first speak briefly on the medico-legal phase of autopsy procedure. In 1919, the present law was enacted which places the authority for ordering an autopsy upon the county solicitor or the Attorney General. Upon order from the

county solicitor, the medical referee is authorized to call the pathologist of the state laboratory of hygiene of the state board of health for assistance. Since 1919, autopsies under the law have been performed by Dr. Kingsford of Hanover, Dr. Hubbard of Keene, and myself.

In citation of cases I think Dr. Kingsford has shown the necessity for increased autopsies for accurate diagnosis as to cause of death.

I presume one reason why more autopsies are not performed is because they must necessarily be arranged for at a set time, necessitating that a busy physician in order to attend to same must re-arrange his daily program which he is not always willing to do.

The value of autopsy findings to an institution was demonstrated at the New Hampshire State Hospital a few years ago in a case where pneumonia was given as the clinical diagnosis which autopsy proved was typhoid fever. It was known that the case must have exposed many patients in a large, open ward where the inmates were very demented and very untidy. Examination of some hundred patients revealed several suspicious cases and some five or six were definitely diagnosed as typhoid. In this instance as a result of the autopsy findings all the patients in the exposed ward, and in fact, all the male patients in the hospital were immunized against typhoid fever with vaccine furnished by the state board of health laboratory.

No subsequent cases of typhoid developed.

Just a week ago last Sunday, the laboratory was called upon to perform an autopsy in a New Hampshire city. A case of sudden death in a tenement district. Autopsy findings showed cerebral hemorrhage covering both hemispheres. The interesting part of the autopsy was found in the abdominal and systemic aorta. Above the aortic valve in this specimen (I will pass around for you to see) is evidence of acute aortitis. The blood taken at autopsy showed a plus four Wassermann, this disease being responsible for the condition found in brain.

Dr. Kingsford's case of gallstone is in part duplicated by case of death after several days following automobile accident in which patient suffered a fracture of the tibia. While in the hospital the patient developed symptoms of diffuse nephritis and marked jaundice. The autopsy showed among other things a mass size of golf ball at the junction of bile and pancreatic ducts. The gall bladder had been removed at operation some years previous. As in the case Dr. Kingsford cited, here again the probing of the duct at the time of operation for removal of the gall bladder might have shown a lodged stone in the common bile duct. The findings of the autopsy in this case were significant as bearing on the importance of the automobile accident as to the cause of death.

The assistance rendered by the state laboratory in medico-legal work has led to a better spirit of co-öperation by all officials concerned in the work.

Cases are handled by the laboratory officially under the law instead of, as was formerly the case, when members of the laboratory staff as individuals worked sometimes on the state side of case, sometimes on the side of the defendant

Dr. George C. Wilkins, Manchester: I have been very much interested in both the paper of Dr. Kingsford and the discussion following and I am greatly surprised. I did not suppose that there was an institution in the State that could get the percentage of autopsies they reported and it is almost unbelievable to me. I know in Manchester we are very remiss, and the only excuse we can offer is that we do not have house-officers and we do not have a pathologist. Now those are the two requisites that bring out autopsy work. I can go back 27 years to the time when I was in the Long Island Hospital in Boston Harbor and we had between 70 and 80 per cent. of autopsies there; but the house-officers were the ones that went up to the homes and got permission for the autopsies and Dr. Magrath did the autopsies.

At Hanover and Concord they have a pathologist whereas at Manchester we do not. That is one outstanding factor. The other is the willingness and ability to go and get them which we have not shown.

Speaking from my experience, after I have done an operation and the patient unfortunately dies, it is rather difficult for me to approach the family and ask permission for another assault on the body of the deceased, and I think other men feel the same way that I do. This report by Dr. Kingsford will stimulate the rest of us to emulate the success they have had. I am sure we will try to.

Dr. Howard N. Kingsford, Hanover (closing): I have not anything to say except this—that if anybody does an autopsy and wants a microscopic examination or any other kind of examination of the organs, I will be glad to do it free of charge.

DIAPHRAGMATIC HERNIA*

BY LAWRENCE R. HAZZARD, M.D.†

IN reviewing the literature, we find that Ambroise Paré as early as 1610 described and reported two cases of traumatic diaphragmatic hernia. From 1610 to 1886 the condition has been reported and described by such men as Riverius, Kirschbaum, Morgagni, Cooper and Bowditch. The first case of diaphragmatic hernia to be operated successfully was performed by Naumann in 1888. Giffin found that in 690 cases reported previous to 1912, most of these were discovered at autopsy, a few discovered at time of operation and only fifteen had been diagnosed clinically.

Since the advent of the Roentgen ray there has been an increased interest in diaphragmatic hernias and over 1000 cases have been reported and diagnosed. In 1925 L. B. Morrison's record totaled 53 cases, all of which are non-traumatic of the cardia of the stomach through the esophageal opening. In discussing the subject with Dr. Thomas R. Healy, he informs me that it is now a routine procedure to look for a diaphragmatic hernia.

There are many different classifications of diaphragmatic hernias and while none of them seem to be precise, we prefer the classification of Dr. Stuart W. Harrington of Mayo Clinic, which is as follows:—

"I. Non-traumatic.

1. Congenital, due to embryonic deficiency, of which the most common are:
   (a) Through the hiatus pleuroperitonalis (foramen of Bochdalek) without an enclosing sac.
   (b) Through the dome of the diaphragm.
   (c) Through the esophageal opening.
   (d) Through the foramen Morgagni.
   (e) Through the gap left by absence of the left half of the diaphragm.

II. Traumatic.

1. Indirect injury to the diaphragm: it may occur at any point, but usually through the embryonic fusion point, the result of crushing injuries and usually with a sac.

2. Direct injury to the diaphragm; the hernia may occur at any point and is usually the result of penetrating wounds (gunshot or knife wounds) and usually without a sac."

The etiology of a diaphragmatic hernia may be better understood by giving some consideration to the anatomy of the diaphragm. The diaphragm is a thin, musculo-fibrous dome-shaped septum arising from the outer and lower walls of the thorax, the upper surface being convex, and when without congenital defects it completely separates the thoracic from the abdominal cavity. Its peripheral part consists of muscle and tendinous fibres that arise from the internal circumference of the thoracic outlet, and the lumbar vertebrae, and pass upward and inward to converge in the central tendon.

The chief openings of the diaphragm are: 1. The aortic opening which is the lowest and most posterior of the three large apertures. It is an osseo-aponeurotic aperture that is formed by the tendinous portion of the left and right crura passing forward and inward to meet the corresponding portion of the opposite side, thus forming an arch beneath which pass the aorta, vena azygos major and thoracic duct. The aortic opening is strongly entrenched from behind by the vertebrae and on the sides and in front by the tendinous portion of the left and right crura, and in reality lies behind the diaphragm. The aortic opening being behind the diaphragm would not be subject to embryonic developmental defects and, as far as I was able to discover, has never been known to contain a hernia.

The opening for the inferior vena cava is tendinous in structure and is placed at the junction of the middle and central leaflets of the central tendon and is quadrilateral in form. Again, we find this opening strongly guarded with tendinous fibres and did not find a report of a case of herniation through this aperture.

The inner bodies of the two crura after forming the arch for the aorta become muscular in texture and decussating form the posterior and lateral and generally the anterior margin of the esophageal aperture. The anterior margin may be tendinous, being formed by the central tendon. Through the esophageal opening pass the esophagus, the vagus nerves, and some small esophageal arteries. Here we have an anatomical structure, muscular in origin and therefore subject to dilatation. Dr. Thomas R. Healy, in a paper read before the American Roentgen Ray Society, at Atlantic City, says: "Our present records total 53 cases, all of which are non-traumatic of the cardia of the stomach through the esophageal opening and are what I believe to be true diaphragmatic hernias." I believe it is often impossible to determine whether a herniation through these muscular bundles can be classified as non-traumatic or traumatic. Certainly one would have to rely on the history alone to come to any definite conclusion.

On each side of the diaphragm posteriorly there is a triangular space of muscular deficiency whose inner border is formed by the outer crus

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†For record and address of author see "This Week's Issue," page 1173.

of the lumbar portion of diaphragm, the posterior border and base by the 12th rib and the outer border by the last muscular part of the costal portion of the diaphragm. The apex of the triangle points upward toward the central tendon. This space was first described by Bochdalek in 1848. It is also known as the hiatus pleuro-peritonalis. This space is generally strengthened and closed by a membrane made up of two layers. The upper layer comes from the pleura and the lower layer is a continuation of the iliac fascia. Without entering a detailed discussion, let it suffice to say that failure of fusion, or proper deposition of any of these adjacent points of union during embryonic development may result in a continuity of the thoracic and abdominal cavities, or at least a congenital weakness of this foramen. It is readily seen that sudden intra-thoracic or intra-abdominal pressure on this weakened area would likely give rise to a diaphragmatic hernia.

There is one other foramen that merits consideration, i.e., the foramen of Morgagni. Arising from the posterior surface of the xiphoid cartilage are slender bundles of muscle that help to form the diaphragm. These muscles are the sternal portion of the diaphragm. There are muscular deficiencies on each side of the sternal portion, through which the deep epigastric vessels pass and it is covered above by the pleura and below by the peritoneum. Here a hernia may occur because of this weakened muscular area.

The symptoms of herniation of the diaphragm vary greatly. A small esophageal hernia that is seen occasionally under the fluoroscope and then reduces itself before an x-ray plate can be made would hardly cause a patient much distress. The thoracic symptoms are caused by the invasion of the abdominal viscera, with embarrassment of the organs of respiration and circulation. Chief among these are a sense of fullness in the left chest, cyanosis, dyspnea, dull pain radiating to the back, and occasionally palpitation of the heart. The abdominal symptoms are determined by the degree the organs of digestion are interfered with in their normal function. If the stomach passes through a congenital weakened area of the diaphragm and is capable of reducing itself no disturbance would be expected. If we have an esophageal hernia and the stomach is drawn up high in the thoracic cavity, so that it forms an acute kink in the esophagus as it enters the stomach, the patient will have great difficulty in swallowing solid food. A herniation involving part of the stomach, with torsion and constriction, will cause epigastric distress after meals, nausea, vomiting, marked epigastric bloating, and difficulty in belching gas. At times the symptoms may simulate those of gastric or duodenal ulcer. There is a case reported in the literature that was operated for ulcer, that was later found to be a diaphragmatic hernia.

The physical signs depend entirely upon the amount of thoracic space occupied by the abdominal viscera. Ordinarily, as the hernia is practically always on the left side (possibly because the liver acts as a buffer for the right side) we may expect the heart to be pushed over to the right. The stomach being the organ most commonly found in the thoracic cavity the physical signs will vary according to the amount of food, water or air contained in the stomach. If the stomach is filled with gas there will be a tympanic note over the lower posterior aspect of the thorax. In case a large part of the thoracic cavity is filled with stomach, omentum, large and small gut, breath sounds may be entirely absent. Splashing or gurgling sounds may be heard in the lower posterior and lateral portion of the chest.

Although a diaphragmatic hernia is rare in general practice and while the symptoms and physical signs make a diagnosis difficult, yet they are clear enough to bring to our mind the suspicion of the condition. By the aid of the Roentgen ray practically every case of diaphragmatic hernia may be diagnosed. Without the x-ray the condition is very likely to be overlooked and treated for almost any disease of the chest or abdomen.

The prognosis of diaphragmatic hernia is improving as the condition is more generally recognized and also because of improvement in surgical technique.

At the Massachusetts General Hospital they have had 18 cases of traumatic diaphragmatic hernia, three operations and one death. At the Bellevue Hospital, New York City, six cases of diaphragmatic hernia were operated upon and two died, only one case was traumatic in origin and this was a fatal post operative case. While the above shows a high mortality, yet it would seem that in some hands the operative risk is not great. S. W. Harrington reports eight cases operated, no deaths and one recurrence. P. E. Truesdale comes to the conclusion that early recognition of diaphragmatic hernia reduces the mortality from 75% to 10%.

The treatment of diaphragmatic hernia of traumatic type is usually surgical. Surgery is indicated for the non-traumatic type according to the severity of the symptoms. There are two methods of approach. (1) The abdominal, which is practised generally by American surgeons, and (2), the thoracic, which the French employ. Occasionally a combination of both methods are used.

S. W. Harrington of the Mayo Clinic says, "Diaphragmatic paralysis by phrenicotomy is of value as a palliative procedure in certain cases of diaphragmatic hernia in which radical surgical procedures are contraindicated Preliminary phrenic emphraxis is an aid in the selection of these cases.

Phrenicotomy as preliminary to radical surgical procedure is of value in closing large

hernial openings in selected cases. Phrenic emphraxis is of great aid in the technical closure of openings in the diaphragm in operations by the abdominal approach on very obese patients.

CONCLUSIONS

1. Diaphragmatic Hernia is not an extremely rare clinical entity.
2. From symptoms and physical findings the diagnostician is liable to overlook the condition unless the valuable aid of the roentgenologist has been secured
3. In the last few years the aid of the Roentgen ray and the improved technique in surgical procedure have greatly reduced the mortality of serious cases of diaphragmatic hernia.

REPORT OF CASES

CASE I.

Mr. V——, while driving along the highway between York and Portsmouth, on November 18, 1928, became involved in an automobile accident and received a crushing injury to the chest. His chief symptoms were—a feeling of fullness in the left chest, that was increased after partaking of meals, dull pain in the front apex of heart radiating to the back, and extreme dyspnoea on the least exertion. An x-ray plate was made and a diagnosis of probable diaphragmatic hernia was made. The herniation was not extensive and he was put to bed for a period of eight weeks. The last x-ray plate was negative and the patient's symptoms have completely disappeared.

CASE II.

Through the courtesy of Dr. A. L. Clifton, U. S. N., I report the following case, which he treated at the Portsmouth Naval Hospital.

Mr. C —— in 1927 had a motor-cycle accident, resulting in a fracture of the left wrist, left ankle, left hip and three ribs on the left side. He was in the hospital for ten days and then at home for three months before he went back to work. While at home following the accident his present trouble started, and has been continuous to date. Patient has a continuous feeling of fullness and discomfort in his upper left epigastrium, which becomes intense after meals. At present time he has a feeling of gas in his stomach and says, "as if my stomach was floating up in my chest and cutting off my wind". His discomfort is markedly relieved by lying down. He has lost 15 to 20 pounds in weight since beginning of present illness. X-ray plates show stomach and splenic flexure above diaphragm. Patient refused operation.

DISCUSSION

DR. DAVID W. PARKER, Manchester: It has been a great pleasure to hear this paper by Dr. Hazzard. For some time I have been particularly interested in this subject. This interest has been further stimulated because of a case which was referred to me by Dr. C. O. Coburn, and came under my care in the latter part of 1928.

Hernia through the diaphragm has always been considered to be a very rare condition. The traumatic form unquestionably *is* very rare, and it is fortunate that this is true, as it nearly always presents itself as a surgical emergency or as a forerunner of intestinal obstruction, and its relief is attended by difficulties requiring the highest degree of skill and surgical judgment.

Dr. P. E. Truesdale, of Fall River, without doubt has had the largest series of cases (5) of anyone in New England, and has done much pioneer work on this subject. I believe, however, that the statistics on the congenital or acquired form, particularly that form which occurs through the oesophageal opening or hiatus, will have to be revised.

Our x-ray friends, through special technique and skill, have already demonstrated that oesophageal hiatus hernia is present much more frequently than has ever been believed. By some observers this frequency is placed as high as 1%. Dr. L. B. Morrison has observed more than 150 cases in his own practice.

In this type of hernia the stomach is the herniating organ, although very rarely other viscera may be present. This form is almost never dangerous to life as the stomach is practically never adherent, nor does it strangulate. In a personal communication Dr. Morrison states that these herniae vary in size from an English walnut to 2/3 of the stomach.

Quite a percentage give rise to no symptoms, yet I believe they are of much more than academic importance as by no means a negligible number do give rise to a train of symptoms ranging from epigastric discomfort to extreme dysphagia. These symptoms are very easily confused with those occurring in peptic ulcer or in mild attacks of cholecystitis. The consensus of opinion of many observers is that the most common symptoms are high epigastric distress or low substernal discomfort radiating to the back between the shoulders, hyperacidity, dysphagia, especially of solid food, and eructations of food and gas. According to Morrison, all of these cases have open cardias and not uncommonly have congenital abnormalities like diverticula somewhere in the oesophagus.

Akerlund (*Arta. Radiol.*, 1926, VI, 1) stresses quite exhaustively the importance of this type of hernia and makes some very pertinent observations.

This condition is accompanied in about 30 to 40% (according to Morrison) by other abdominal pathology like gall bladder disease, etc., and unquestionably the symptoms from the hernia are aggravated by the reflex irritation of the stomach. A large percentage of these cases are not surgical and operation for closure of the hernia should be performed only after very careful study and selection.

Dr. D. F. Jones stresses the importance of ruling out all other pathology, or of correcting this pathology when present, before considering a repair of the hernia. He states that he has had several cases in which Diaphragmatic Hernia was demonstrated and gall stones also found. Removal of the gall stones relieved most of these patients. He has seen 25 cases and op-

erated upon 6 cases, with one death, in which gall-bladder drainage was combined with herniоplasty.

Dr. E. P. Richardson, in an unpublished manuscript, reports 5 cases in 2 of which an attempt was made to close the hernia. These patients obtained relief. Subsequent x-rays, however, showed a recurrence of the hernia.

Dr. Morrison believes that the hernia symptoms may be improved, but not relieved, by operations on other pathology.

I am convinced that this condition cannot be eliminated without skilled x-ray examination, in the differential diagnosis of patients presenting these confusing symptoms in the upper abdomen.

CASE REPORT

A. H., female, age 47 years, was admitted to the Elliot Hospital, November 30, 1928, with the following history: *Family history:* Father, died—Heart disease; Mother, died—Shock; 1 Sister died of Cancer. *Previous history:* Not important. *Present history:* Menstrual disturbance with menorrhagia and pain for period of 11 years. Treatment during this time by several physicians and in a hospital. For three weeks previous to admission to hospital had been suffering from metrorrhagia, pain and weakness.

She also stated that during childhood she had had a feeling of a lump in the epigastrium, especially after meals.

During pregnancy 18 years ago she had nausea and vomiting during the whole time. She also had hyperacidity. After the termination of pregnancy the vomiting ceased, but the hyperacidity (heart burn) persisted. She also had epigastric or substernal pain radiating between the shoulders.

Three years ago she began to have difficulty in swallowing for the first few bites; solids were worse than liquids. This occurred mostly at dinner and supper. She had no difficulty during the night. She also had had for years eructations of liquids and gas. The difficulty in swallowing, she states, was relieved at times by bodily movements.

Examination: Physical examination shows: Heart normal. B. P. 140/92. Lungs clear. Abdomen normal except for some rigidity and tenderness in epigastrium. *Vaginal examination:* Enlarged uterus with small fibroid tumors. There was some edema of both legs. *Blood examination* shows: W. B. C. 8450; R. B. C. 3,270,000. Haemoglobin 50%. *Examination of stool:* Benzidine negative.

X-Ray Examination:

"X-ray examination of the G. I. tract shows no abnormality in the passage of food into the stomach. The stomach contained a small residue at 5 hours, but there was no evidence of obstruction. Peristalsis was slow but present over the normal area. Food passed the pylorus freely and the duodenum was not abnormal. In the erect position no abnormality was noted, but in the prone and supine positions a portion of the gastric contents passed above the diaphragm into a pouch-like projection about 5 cm. in diameter which appeared separate from the oesophagus. Across this pouch in the vertical direction was a constriction indicating a band of tissue.

The remainder of the tract was not remarkable.

The findings indicate a hernia of a portion of the stomach through the diaphragm probably at the oesophageal opening."

Signed: A. S. Merrill, M.D.

Hysterectomy was performed and abdomen explored and hernia through the oesophageal hiatus was found which admitted 3 fingers, and contained the cardiac end of the stomach. This was not adherent.

Following operation she made a perfect recovery with very little more nausea and vomiting than is experienced by the ordinary patient.

She was examined by me on May 23 and stated that she had been feeling very much better since the operation, had gained in weight, and her strength had returned. Her stomach symptoms, particularly hyperacidity and dysphagia, still persisted but were not so severe as before. These symptoms are easily controlled by taking calcium carbonate after meals.

Dr. H. O. Chesley, Dover: The term diaphragmatic hernia, to the average physician, applies to an acquired traumatic hernia. This condition is relatively infrequent however, in fact it is so infrequent, that we seldom see it

But the non-traumatic or congenital form is more common than we have been led to believe, and in our work their presence has ceased to excite discussion, and it is this type that I will briefly discuss.

We may describe it as a congenital defect in any portion of the diaphragm, through which all the abdominal organs have been known to pass, including the kidneys, with the exception of the bladder and generative organs, the stomach and secondarily the colon being more commonly involved however.

The most common site of the hernia is the esophageal opening, this being the only diaphragmatic muscular orifice, therefore permits of more dilatation.

While they are said to occur in the right diaphragm I have never seen one on the right side; nearly all the cases I have seen have occurred through the esophageal opening, generally going up behind the esophagus. Up until the routine x-ray examination of the chest and the abdomen only a small percentage were diagnosed before death.

Now there are two things I wish to emphasize: first, from a surgical point of view, it is important that they should be differentiated from eventration-thoracic stomach-diverticulum of the esophagus and congenital absence of the diaphragm, and second that from a medico-legal, industrial or insurance point of view, they should always be regarded as congenital unless they are proved to be traumatic.

Dr. George S. Foster, Manchester: I just want to say a word on this subject of diaphragmatic hernia. We must not forget that some of these cases come to us acutely ill and in collapse and that they are suffering a great deal of pain. It is not always, though perhaps in the majority of cases it is true, that they have a traumatic history.

I believe that we should always consider, in making an incision in the abdomen to correct this condition, that the incision must be above the umbilicus and thus necessarily we must in-

jure the trophic nerves more than we would in other areas. Thus the healing process, and in the postoperative care the removal of the stitches must be taken into consideration if we are to get a good result without separation.

I also believe that postoperatively these cases should be given very special consideration, including the postoperative posture. Place the patient in a modified Fowler's position, the head of the bed isn't elevated but rather the entire spring is elevated, and the patient is turned to the opposite side from the operative field. I think it is a vitally important thing to have the head of the bed elevated and the patient turned on the opposite side so that they will pendulate the hernia in the opposite angle.

SOME DIAGNOSTIC AND THERAPEUTIC ASPECTS OF INFECTIONS OF THE FEMALE GENITAL ORGANS*

BY HENRY SCHMITZ, M.D.†

INFECTION of every type and in every location is but a battle between the body and the invading organism. A victory of the host, which is spoken of as recovery, may leave a residue in the form of permanent pathology. Hence recovery may be complete or incomplete. Recovery is complete if (1) the cause of the inflammation is removed; (2) the dead tissue, inflammatory exudate and proliferative products, are completely resorbed; and (3) if by regeneration the injured tissue is replaced by normal tissue. Such a complete anatomic, physiologic restitution to the normal state is also spoken of as "restitutio ad integrum." In incomplete recovery the damaged tissues are replaced by physiologically, biologically and morphologically inferior tissues. The degree and the character of an incomplete cure depend on the residual rests of the pathological changes of the inflammation which may be either alterative, or exudative, and infiltrative, or proliferative. The dominance of the alterative processes of an infection means deranged function; the dominance of the exudative and infiltrative processes means a stormy course of the infection, while the dominance of the proliferative processes will lead to a detracted, lingering course of the disease. The end results therefore are: (1) permanent changes in the specific functional tissue and cells; (2) infiltrative or exudative processes; or (3) persistent inflammatory tumefactions. All three changes may be found combined in a chronic inflammatory process.

The infectious diseases rank first in frequency in the diseases of the female genital canal. They are of great importance to the gynecologist and the medical practitioner on account of the severe inflammatory changes caused in the invaded tissues and organs. These changes are often permanent when chronic ill health and sterility result. Amongst the infections the gonococcus possesses the greatest etiological importance for the acute and chronic inflammations of the female genito-urinary organs on account of its preponderant frequency.

In 916 consecutive gynecologic patients at the Mercy Hospital, 216 cases or 28.78 per cent. were pelvic infections; while in 906 cases entering my service at the Cook County Hospital, 820 cases or 90.54 per cent. were pelvic infections.

The frequency and the permanent damages resulting in chronic ill health or sterility are the reasons why I have chosen the presentation of this subject.

Pathogenic bacteria gain entrance to the genital tract from without or within. The exogenous infections spread along an ascending route. They occur in connection with the incidents of sexual life as coitus, menstruation, pregnancy, labor and puerperium, gynecologic examinations and treatment, particularly surgical procedures, and also in association with such infectious diseases as measles, scarlatina, diphtheria, smallpox, and chickenpox, which not only cause exanthematous but also enanthematous eruptions. The pathogenic organisms concerned in these ascending infections are chiefly the gonococcus, the strepto- and staphylococci, the colon bacillus, and the specific organisms concerned in the infectious diseases enumerated.

The endogenous infections invade the pelvic organs by either a descending route, or are carried to the pelvic organs by the blood or lymphstream, i.e., a hematogenous route. Descending infections ensue from adhesions of the abdominal to the pelvic organs. They may result from appendicitis, intestinal tuberculosis, typhoid fever, actinomycosis, sigmoiditis, and so forth. The blood and lymph borne infections arise from septic sore throat, pulmonary tuberculosis and acute lobar pneumonia amongst others.

Infections with spirocheta pallida and bacillus Ducrey must always be thought of, though their activity remains localized to the primary sore in the beginning of the disease.

About 75 per cent. of the female pelvic infections are gonorrheal, about 20 per cent. pyogenic or septic, and about 5 per cent. tuberculous. Infection of one part of the genital canal spreads by continuity to the other parts. In the ascending infections the internal uterine os offers an effectual barrier to an upward extension of an infectious process in the lower genital tract. This check unfortunately becomes

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inactive during menstruation, labor and puerperium. Thus may be explained the frequent onsets of pelvic infections at these periods. This observation may also serve as a warning to the physician not to practice unnecessary intrauterine instrumentation and medication.

Pelvic infections are self-limited processes. If treated conservatively about 65 per cent. terminate in a complete cure with restitution of normal physiologic and anatomic functions, and an additional 20 per cent. end in a subjective cure,—the patient is free from symptoms and reacquires normal capacity for work and enjoyment of life, though permanent pathologic processes are left behind. Sterility is usually present in these cases. The remaining 15 per cent. constitute the chronically invalided patients who must be subjected to radical surgical measures of treatment to restore health.

Chronic invalidism is expressed in more or less continued and severe deep-seated pelvic pains, menstrual disturbances as profuse, prolonged, too frequent and painful menses, leucorrhea and sterility. In the beginning the disturbances are localized, but as years pass the general health of the patient becomes seriously undermined.

Functional incapacity means sterility. If the functions of ovulation and menstruation are normal, if bimanual examination of the pelvic organs does not elicit palpable pathology, if a chronic cervicitis with profuse leucorrhea does not exist, and if the husband's semen is compatible with the cervical and vaginal secretion as determined by the Hühner test, then the sterility is probably caused by blocked uterine tubes.

TREATMENT

Acute and subacute infections of the female genitals indicate conservative and expectant treatment. The acute infections should not be treated until smears from the cervical canal or vulva have been examined to establish the nature of the infection. Acute infections of the lower genital tract, i.e., from the internal uterine os downward are treated as follows: Every active treatment of the invaded structures is contra-indicated for three to four weeks after onset of the infections. Rest in bed is imperative. Cleanliness of the external genitalia is attained by external douches. Cohabitation must be strictly interdicted. After three to four weeks the vulvitis is treated with applications of 10 per cent. solution of mercurochrome by means of a cotton applicator. The urethral infection usually abates spontaneously. Should it not subside then local applications of mercurochrome or silver nitrate solutions are made. If the vesical neck becomes involved then infusion of uva ursi, urotropin, and salol may be given. A persistent infection of the bladder is treated with irrigations of 10 per cent. mercurochrome or 2 per cent. silver nitrate solutions. The paraurethral ducts are incised with a nasal cautery point after cocainization of urethra and meatus. Should infections of Bartholin's glands persist then the duct may be cauterized or the gland excised. Condylomata acuminata are snipped off with scissors followed by electrocauterization. Rectal gonorrhea is benefited by anusol or protargol suppositories inserted every eight hours.

The cervix is the most frequent site of genital infections. Infections of the cervix are the chief cause of sterility in women. Erosions of the non-lacerated cervix and upon the everted lips of the torn cervix become a source of chronic irritation and concomitant hyperplasia and hence a precursor of cervical cancer. Local treatment or douching cannot relieve this condition. Superficial erosions should be cured by linear radial cauterization with the fine point of an electric cautery. Chronic endocervicitis indicates dilatation to 1 cm. and the insertion of the tip of a heavy cautery 0.5 cm. wide. From four to six incisions are made from the internal os down and about 1 mm. deep. Hypertrophy of the cervix and cystic degeneration require trachelorraphy. These procedures should not be preceded by curetting.

Infections above the internal os, that is the true pelvic infections or adnexitides, require general and genital rest. Bimanual examinations should not be repeated after the first and diagnostic palpation has been made unless the patient's progress is unsatisfactory and complications are feared. The patient is placed in the recumbent position. The head of the bed is elevated. An ice-coil or cold compresses are applied over the lower abdomen. Temperatures above 102.5°F. require cold sponging and ice cap to the head. If peritoneal irritation is present, indicated by tympanites, nausea and vomiting, food per mouth is withheld. If the symptoms persist gastric lavage should be used. Low enemas are given to evacuate the bowels. If food is permissible it should be bland and nourishing. Pain may be relieved by phenacetin, aspirin and, as a last resort, morphine.

The fulminant hemolytic streptococcal metritides, peritonitides and septicemias are rarely seen. These are treated with antistreptococcal serum (10 cc. of special concentrated serum of Parke Davis Co.) intravenously as soon as the diagnosis has been made from the vaginal smear or blood cultures with general sepsis. Quinine bi-hydrochloride grs. 5 dissolved in 10 cc. of sterile distilled water is injected intramuscularly, daily if necessary, until the temperature subsides. It may also be given intravenously. Blood transfusion is given early in the disease to increase the patient's resistance to the invading organisms and their toxins, and is repeated as a supportive measure in long drawn out cases. The N. M. Percy method may be used. However the donor should be in a separate adjoining room and the blood should be obtained by a

surgical team not connected with the recipient's. Lash has recently published a series of 57 cases of puerperal infections treated with a concentrated streptococcus antitoxin (10 to 40 cc. of special concentrated antitoxin of Eli Lilly & Co.). The mortality was 32.1 per cent., while in peritonitides it was 90 per cent.

Persistence of temperature in pelvic infections beyond eight days usually means the formation of an abscess or some other complication as in favorable cases the temperature drops by lysis and becomes normal within three to seven days. Only then when the condition of the patient does not improve is a re-examination indicated. A peritoneal abscess in the recto-uterine pouch causes a bulging in the posterior vaginal fornix. A pelvic cellular abscess is usually found lateral to the uterus and from there may spread anteriorly to become palpable above Poupart's ligament. As soon as fluctuation appears drainage is instituted. The preferable route is the vaginal if bulging appears in the vaginal fornices. Anterior abscesses, of course, are drained abdominally. Abscess formation in the free pelvic cavity is therefore the one indication for surgical interference in acute pelvic perimetritis. Pyosalpinx is never drained as it may undergo early resolution which may be promoted by injections of 10 cc. of sterile milk or an ampule of aolan in the muscles of the buttocks every four days six to ten times.

If a normal temperature has persisted for ten days a second bimanual examination is made. Should the temperature remain normal the patient is permitted to be up and about. Within another three to four days she may be discharged and is told to reappear for examination after each menstrual period when smears are taken or cultures are made if the smears are negative. Resolution of the inflammatory tumefaction is as a rule rapid and completed within one to six months. It may be hastened by daily hot baths, the internal administration of iodid of potash and hot vaginal douches of iodine solutions.

Unresolved pelvic infections terminate in chronic pelvic inflammations which are characterized by deep pelvic pain, menstrual disturbances, sterility and the discharge of a purulent substance. Ability to work and enjoyment of life are reduced.

Chronic infections require conservative treatment. An attempt should be made to bring about resolution by the use of diathermy, Priessnitz compresses, local application of heat by means of long continued, hot vaginal douches, the internal administration of arsenic compounds and potassium iodid and complete abstinence from sexual life. The husband must be told to undergo competent treatment if the infection was primarily gonorrheal.

If conservative treatment has been faithfully carried out and relief is not obtained surgical measures are instituted. Charting of temperature, differential leucocyte counts, sedimentation time of red blood corpuscles must be made to rule out an active lurking infection. Operation usually consists in the freeing of adhesions, the removal of pus sacs, the placement of the uterus in an anteverted position with careful hemostasis and exact peritonealization. The possibility of future fructuousness should be created. Therefore menstruation and ovulation must be conserved if at all feasible. A coexisting chronic cervicitis should be treated at the same time. Cauterization suffices in the majority of cases.

The following table shows at a glance the frequency and kind of resulting chronic infections observed at my services at Mercy and Cook County Hospitals. It also gives the numbers of operations and operative mortality. The number of acute and subacute cases is low. At the Mercy Hospital they are treated ambulatory in the out-patient department. It is not deemed

TABLE SHOWING FREQUENCY OF INFECTIONS OF FEMALE PELVIC ORGANS IN A PRIVATE AND PUBLIC HOSPITAL SERVICE

Total Number of cases:	Mercy Hospital 916;			Cook County Hospital 906.		
	Number	Oper.	Deaths	Number	Oper.	Deaths
Salpingitis:						
Acute	2			26	3	
Subacute	11	1		42	10	
Chronic	35	31		292	272	6
Perimetritis:						
Acute	7	2*		67	52*	
Chronic	71	44		295	259	6**
Retroflexions:						
With adhesions	29	28		64	63	
With complications	25	23		34	19	
Appendicitis:						
Acute	6	6	1			
Subacute	4	4				
Chronic	23	23				
Plus tubal pregnancy	1	1				
Plus normal pregnancy	2	2				
Total	216	165	1	820	678	12

*Drainage of pelvic abscesses: Abdominal, 36; Vaginal, 16.
**Two deaths from carcinoma. Three deaths from tuberculous infections.

advisable to keep such patients with the non-infected cases to prevent contamination of the latter. At the Cook County Hospital the acute infections are assigned to the wards for venereal diseases. Frank cases of appendicitis remain in the gynecologic service at the Mercy Hospital, while they are referred to the surgical service at the Cook County Hospital. The low operative mortality must be attributed to the strict observation of the indications for safe surgical treatment.

DIAGNOSIS AND TREATMENT OF STERILITY DUE TO BLOCKED UTERINE TUBES

Sterility is a complex and serious problem. The desire of a married woman to have offspring justifies diagnostic and therapeutic interference. Some of the most frequent causes of sterility are probably chronic cervicitis and closure or blocking of the tubal lumen resulting from a preceding pelvic infection. If palpable evidences of former infections are present in the latter cases then the diagnosis is made by palpation. Tubal gas inflation and hysterography are not necessary as diagnostic measures. If palpable evidence cannot be elicited then closure of the oviducts is determined by tubal air inflation and the site of obstruction is located by hystero-salpingography. Rubin and Kendall must be given credit for the development and perfection of these newer diagnostic procedures in gynecology.

Tubal air inflation and hystero-salpingography must not be performed if a history of recent infection, amenorrhea, uterine hemorrhages or leucorrhea is obtained, or the patient is in the period of premenstrual endometrial hypertrophy or postmenstrual endometrial repair. A hidden infection may be recognized by inoculating 5 cc. of the patient's blood taken from an arm vein with a cervical smear. If after an incubation of 24 hours bacteria have grown one may assume that pathogenic bacteria are present in the genital tract. Charting the temperature, making a differential count of the leucocytes and determining the sedimentation time of the red blood corpuscles give further evidence of the presence of an active infection in the patient. Amenorrhea is a contraindication to any intrauterine manipulation unless pregnancy can be excluded. Uterine hemorrhage may be due to the process of menstruation with atonicity of the myometrium or to accidents of pregnancy or to loss of continuity of the surface epithelium of the endometrium by benign or malignant changes. It is evident that instrumentation, air inflation or oil injection may force such abnormal tissues through the tubes into the pelvic cavity where they may give rise to serious complications. Leucorrhea may mean a recent or a chronic latent infection. It should be removed by proper treatment as active infections form a contraindication to intrauterine manipulations and instrumentation. Chronic cervicitis is frequently accompanied by leucorrhea and if present constitutes a contraindication to tubal air inflation or oil injections. During the premenstrual period the normal hypertrophy of the endometrium may cause an obstruction of the uterine opening of the tubes. Endometrial tissue may also be forced through the tubal lumen into the abdominal cavity where it might give rise to the formation of endometriosis. Likewise in the postmenstrual period of repair such an accident might occur. It is therefore evident that the safe time to perform tubal air inflation and hysterosalpingography is the resting stage of the menstrual endometrial cycle which lasts from the eighth to the fourteenth days of the cycle calculated from the beginning of the last menstruation.

The technique of air inflation of the uterine tubes is very simple. Strictest asepsis must always be observed. A "Y" shaped metal tube is attached to a uterine metal cannula perforated at the tip and provided with a nozzle-shaped soft rubber guard about 4 to 5 cm. from the tip. Pressure of the rubber shoulder against the external os closes the latter air and water tight. To one arm of the connecting piece a manometer is attached to enable one to control the air pressure. To the other arm a rubber bulb is connected of a capacity of 30 cc. See Figure 1.

Morphine gr. ¼ and atropin gr. 1/100 are given hypodermically one-half hour before the examination. The patient is placed on a pyelogram table in a lithotomy position. The genital canal is made sterile as for any vaginal operation. The cervix is exposed through a bivalve speculum and grasped with a tenaculum forceps. The cannula is inserted intrauterine. Should the cannula become arrested at the internal os then a dilatation of the cervical canal with graduated dilators should be done. Traction on the tenaculum forceps and

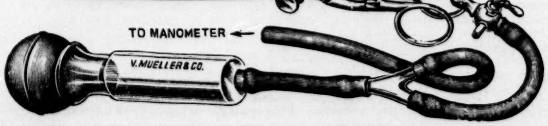


FIG 1. The Author's Apparatus for Air Inflation and Iodized Oil Injections of Uterine Tubes.

simultaneous upward pressure on the cannula close the cervix air tight. The tenaculum forceps may be secured in a rotating clamp attached to the cannula. Thus both hands are free. The rubber bulb is slowly compressed. If air enters the abdominal cavity under 60 to 100 mm. mercury pressure then the tubes are patent. Should air not enter until about 150 mm. pressure has been exerted then the tubal patency is doubtful. Should air not enter with 200 mm. pressure then the tubes are closed. The pressure must be increased very gradually and maintained for at least ten minutes. This can be done by closing a stopcock inserted between the rubber bulb and the connecting tube. Uterine and tubal spasm slowly subside and the air will now enter if the tubes are open.

Should the air patency test be doubtful or negative then the manometer and rubber bulb are removed. Ten cc. of warm 40 per cent iodized oil are drawn into the rubber bulb glass syringe and slowly injected with the lowest pressure possible until the entire amount has entered the uterine cavity. The stopcock is now closed and an x-ray picture taken. It is immediately developed and if it proves unsatisfactory another x-ray picture is taken fifteen minutes later. A negative result is frequently obtained in the first picture and a satisfactory one in the second. Evidently the uterine and tubal spasm has subsided in the meantime and the uterine contraction has forced the oil upward. A spill around the ampullary extremity of the tube or oil within the free pelvic cavity indicate openness of the uterine tubes. If the oil remains within the uterine cavity then constriction in the intramural portion of the tubal lumen is present. The latter may be unilateral. Oil in the uterine tube without spill means closure at the abdominal os. If negative results are obtained it is advisable to repeat tubal inflation and salpingography after four weeks. If the uterine tubes are again found closed then the diagnostic findings may be considered correct.

Blocked uterine tubes can only be opened by surgery. Stricture of the intramural portion demands resection and reinsertion into the uterine canal through a newly made channel. Closure at the abdominal end, if the abdominal os is not found open after removal of the adhesions, requires a plastic operation. The end is removed slantingly, the tubal mucous membrane is attached to the serous membrane with fine catgut sutures. In either operation a twig of heavy chromic catgut is attached to the stoma and inserted through the tubal lumen into the uterine cavity to assure patency. The most careful hemostasis must be practiced to obviate postoperative adhesions. These operations were performed in the clinic fourteen times. Twelve patients were followed up. Hystero-salpingography revealed eight cases with patent tubes. In a series of 300 operations for closure of the ampulla, collected from literature, pregnancies were seen in about 12 per cent. The operation for tubal resection and reimplantation has yielded several pregnancies. Strassmann reported the first full term pregnancy after this operation.

Should the uterine tubes be so badly damaged that they must be removed then a healthy ovary, with conservation of its normal blood supply, may be inserted into the uterine cavity as recommended by Tuffier, Blair Bell and Sellheim. The healthy ovary may also be hemisected and transfixed to the cornu of the uterus which has been amputated so that an opening into the uterine cavity results. Estes performed this latter operation ninety-six times and observed twelve full term pregnancies.

It is evident that operations for sterility should not be done until a Hühner test has established compatibility of semen and cervical secretion. The small amount of air used in tubal pateney tests is devoid of danger as pressure against the diaphragm does not occur. It is well known that pneumoperitoneum should not be used in patients with cardiac or pulmonary disease as sudden deaths and severe shocks have been observed.

In conclusion the following summary reiterates the more important observations discussed:

1. The frequency of infections of the female genital canal renders them of great importance to the general practitioner and to the gynecologist.

2. The treatment should be conservative and symptomatic. Abscesses in the free pelvic cavity should be drained but not tubal or ovarian abscesses.

3. Persistent chronic infections with chronic invalidism should be treated surgically. Surgery should attempt to remove the remains of an unresolved infection with conservation of ovulation, menstruation and fruitfulness if this is possible.

4. Sterility is a frequent result of chronic cervicitis and pelvic infections. The desire of a patient for offspring justifies surgical interference. The chronic cervitis should be treated with the cautery or plastique operation. If the tubal lumen is found to be closed by the air inflation test and the site of obstruction determined by hystero-salpingography then plastic operations are indicated. If both tubes must be removed insertion of a healthy ovary into the uterine cavity may be considered. The surgical procedures have been briefly described.

5. Modern methods of diagnosis in gynecology have contributed greatly to a more correct treatment of sterility due to preceding infections. Whether the results will increase the number of pregnancies to warrant such operations must be left to future reports.

Discussion

Dr. John C. Lawlor, Dover: After listening to this very excellent paper of Dr. Schmitz on a most important subject, very little remains for discussion.

Pelvic infections and sterility have been argued for years with very little improvement in the management of these cases. Interest has lagged until rather recently and we owe considerable to Dr. Schmitz and his co-workers for the renewal of interest in this very important subject.

The newer nonoperative diagnostic methods such as tubal inflation, salpingography and pneumoperitoneum, employed in determining the patency of the Fallopian tubes have done away with a number of unnecessary exploratory operations, and they permit surgical treatment to be carried on in a much improved scientific manner.

The results as yet from the various types of operations on tubal obstructions resulting from infections, have not been very startling but they have shown apparently a definite increase in the number of conceptions over former methods.

Gonorrhea and tuberculosis which account for a very high percentage of sterility in the female, damage the mucous membranes to such an extent that they are not amenable to the various types of operations that render the tubes patent.

A very interesting and decidedly useful procedure which Dr. Schmitz has mentioned is tubal inflation to check up the patency of the tubes, following operations and also its employment to maintain their patency by frequent inflations.

The results of salpingostomy, tubal resection and autogenous ovarian transposition will require very careful study over a long period of years in order to fully justify their use.

It seems that the attitude of the profession in the management of pelvic infections has changed considerably of late years. We have become more conservative in the handling of these cases, over former methods; yet if pelvic inflammation is heading to prolonged invalidism, we are more radical and conservation of the ovaries or portions of them and even of the uterus is of very doubtful value. Complete quiescence of the disease as indicated by the prolonged absence of fever and leucocytosis is extremely desirable and the criterion of safe surgery.

Again I wish to congratulate Dr. Schmitz on this very exhaustive and enlightening paper.

DR. W. H. LACEY, Keene: Dr. Schmitz states that the cervix is the most frequent site of genital infections. I should like to stress the importance of this observation. Now perhaps there is no portion of the tract more easily approached for observation and treatment. The innumerable cases of cervical erosion and laceration that every practising physician and surgeon sees that are at an early stage amenable to treatment must be tremendous in number and the opportunities for prophylactic treatment here are equally great. The treatment of these cases will not only prevent future cases of sterility but also future cases of malignancy and an occasional arthritic. Remember that the cervix is relatively insensitive to pain and that many of these cases can be treated in the office and that the cautery is worth more than a dozen cans of tampons.

All of these facts have been touched upon by Dr. Schmitz and a paper that has covered so much so well must necessarily stimulate.

DR. HENRY SCHMITZ, Chicago (closing): I wish to thank the two gentlemen who discussed the paper and would like to mention three points: first, in gonorrheal infection of the tubes the mucosa is so badly destroyed the operation will give very little results, and in tuberculosis none at all, but in spite of that it is worth while to try it in gonorrhea.

Another observation—if the tubes are found closed at one examination, you should wait four weeks and probably at the second examination, a month later you will find the tubes opened. As far as chronic cervicitis is concerned, the treatment with the cautery is so good that we should discard all former methods of treatment such as the use of douches and the use of tampons as they only waste our time and the patient's time.

MISCELLANY

CHANGE IN THE DATE OF THE ANNUAL MEETING OF THE NEW HAMPSHIRE MEDICAL SOCIETY

By reason of inability to secure rooms as expected, the annual meeting of the New Hampshire Medical Society will be held one week earlier, May 13-14.

The Masonic Temple on South Main Street providing ample floor space for the exhibitors, opening directly into the hall for the general meetings, has been engaged by the local committee on arrangements.

EXHIBITS AT THE MEETING OF THE NEW HAMPSHIRE MEDICAL SOCIETY

The one hundred and fortieth annual meeting of the New Hampshire Medical Society will be held in Concord on May 13 and 14, 1930, at the Masonic Building, South Main street.

There will be a technical and commercial exhibition, for which space will be provided in a hall immediately adjacent to the scientific sessions. Lighting facilities, electrical connections, etc., will be adequately provided. Space will be assigned to exhibitors in the order in which applications are received. Applications should be made early to the chairman of the committee and a prospectus, showing the ground plan of the hall, with a form of contract, will be furnished.

H. H. AMSDEN, M.D., *Chairman*,
Committee on Scientific Exhibits.

NEW MEMBER

Dr. Jerome P. Webster, Holderness, N. H. His present address is Presbyterian Hospital, 168th Street and Broadway, New York City.

NEWS ITEM

More than half the school districts of New Hampshire now employ a school nurse.

MASSACHUSETTS MEDICO-LEGAL SOCIETY

ON COLLEGE DISAPPEARANCES: THE ANALYSIS OF A CASE*

BY LYDIARD H. HORTON, PH.D.†

IT is a particular satisfaction to address a professional group concerned with a hyphenated science such as that which combines knowledge and practice of medicine with learning in law. One reason for appreciation is that I have been engaged in a similarly hyphenated science, which I may call "bio-psychology" or "biological psychology." This endeavors to bring more closely together the phenomena of the mind and the phenomena of the body in explaining the behavior of individuals. Along these lines I hope to throw light on the mysterious disappearance of a Smith College student last winter.

Since all essential intimate details were allowed to be published in the press, it is possible to get a first picture of this problem by reading appropriate clippings. I choose a New York dispatch in *The Boston Globe* of March 4, 1928, headed "Family Still Hope For Frances Smith."

"The 18-year-old daughter of the St. John Smiths of this city, disappeared from Northampton, Mass., on or about Friday, Jan. 13. All clews have failed and to the authorities it is almost a closed case. But to Mrs. Smith, 'only seven weeks' have passed, and to give up hope under the circumstances, 'would not be right.' The circumstances on which the mother lays so much stress is the apparent absence of plans by Frances for flight. Her room in Dewey House, with its blue furnishings and mahogany furniture, the gift of her parents; etchings of French Cathedrals; books by authors, including Milton, Alice Meynell, Robert Bridges and her beloved Blake, still bore the atmosphere of 'real peace' as her mother describes it, when her absence was first noted on Jan. 14. No telltale note was left behind. Her spending money was there in her purse—her reading glasses also. The room looked that Saturday as if she 'had just gone out for a walk.' So Mrs. Smith explained to a reporter for the *Globe*. 'There was nothing,' she observed, 'to indicate preparation for a sudden leave-taking.' Frances is described by her mother as a gentle 'young thing just waking up to life' She was considerate to an extreme. But there was an 'other worldliness' about the girl which was baffling to friends. The other worldliness, as her mother calls it, so consistent with her 'flair for Blake,' could easily account for 'flight impulse.' Unlike college authorities who have said they believe Miss Smith spent Friday night in her room, Mrs. Smith believes Frances left about noon Friday. She was on the registrar's list, which made cutting of even one class forbidden, and Mrs. Smith said she thought Frances might have inadvertently cut one lesson, then become obsessed with the idea that she had committed a great offense. Her 'flight' followed, Mrs. Smith thinks. The parents do not subscribe to the police theory of suicide. They have pondered on this and other possible solutions, including abduction, but do not believe their daughter would have killed herself. Whatever happened to the girl, Mrs. Smith said, she was sure the impelling motive, if her own, was 'fine.'"

This statement has the advantage of giving the family's view and of suggesting the girl's cultural background while emphasizing the paucity of clues.

The personality of Frances Smith, while distinctive to those who knew her well, was not marked by any striking physical features or personal idiosyncrasies. Although a pretty girl, she had the type of physiognomy that would lend itself to an entire change from her normal appearance in case of extreme mental stress or panic. To offset these hindrances in the way of tracing her through casual recognition or identification by persons whom she might encounter, a nationwide publicity was given to the story of her life and disappearance. Newspapers of vast circulation printed double-page accounts with her photographs and outline drawings pointing out her characteristics. One such sheet [here exhibited] carried the heading "This Will Help You To Identify Frances St. John Smith", but the very correctness of the half-dozen sketches of face and figure emphasized the absence of arresting features. Reading the captions we see that she had light brown hair turning reddish, her eyes are bluish gray, she is eighteen years old, weight 130 lbs., height 5 ft. 5 in. The clothes that she probably wore are described as an orange jersey dress, tan collar and cuffs, coat of terra-cotta red with brown fur collar, tan stockings.

This broadcasting of information was at its height when I was called into the case two weeks after the disappearance. At this time the following reason was given for calling in a psychologist: "In the absence of any clues whatever, the only hope lies in piecing together the girl's probable mental state." My plan was to build up a case history and to seek motives or other indicators of her course of action. The task was somewhat complicated by having to meet and sometimes to avoid what may be called the press gallery. Yet friendly coöperation with the newspapers was invaluable for establishing contact with the girl in case she was alive. The editors, seconding police and State authorities, threw themselves into the search for

*Read before the Massachusetts Medico-Legal Society, October 3, 1928.

†Horton—Associate Evans Memorial for Clinical Research. For record and address of author see "This Week's Issue," page 1173.

clues with a minimum of sensationalism and a maximum of effort at discovery. There was something about the innocency and charm of the girl, as recognized by the reporters in contact with the family, that made a special appeal. Nothing was found to contradict the following statement from the active agent in the search: "Frances was a girl of extraordinarily sound morals; that has been established satisfactorily to all investigators and of course it was well known to be the fact in her home. Frances also had every care and attention. However, she was a rather shy and timid sort of girl and a very gentle child. She may have harbored certain fancies which led her to escape from an imaginary environment which actually might have been self-created but so real as to impel her to some sort of flight." This presumes a so-called "fugue" or classical flight impulse, familiar to psychopathologists. It remains to be validated, along with other suppositions, by a technique of "reconstituting" the set-up of the girl's mind at the time of her disappearance. As some statement to the press was inevitable, I made the impromptu remark, which I have no reason to regret, that I would consider the girl's mental behavior as if I were studying the pieces and layout of an interrupted game of chess, seeking to infer what might have been the probable next moves. In order to give to this technique the validity that belongs to it, let me say that I tested it for many years in the psychological analysis of obscure mental conditions and published its results in the literature of dreams, of illusions and phobias, where it goes by the name of "Reconstitutive Method."* It harks back to the reasoning process whereby Thomas Huxley defended the theory of evolution, as explained in his essays on scientific method. An important element in its success is the use of so-called "retrospective propheey" or "retroactive prediction." This is managed by taking, at first, a minimum of data as a basis for guess-work, the validity of which is then tested by confrontation with germane facts previously undisclosed.

I will try to show how this method served to reconstitute the state of being of Frances Smith at the time she disappeared from her dormitory at Smith College. Also, I shall tell how two sets of data, collected respectively in New York and in Northampton, were checked against each other in such a way as to yield a more than probable conclusion as to the girl's fate.

Starting with the family home in New York City as headquarters, connections were established with many persons who knew Frances and her family, including relatives, friends in good number, and persons who had taken care of her, such as the governess, physicians or the chaperons with whom she had travelled abroad. It was not difficult to obtain data. The problem was to coördinate the scattered evidences.

The information obtained from New York sources bore upon her education, temperament, state of health and emotional attitude from childhood till the day of her return to college at the end of the Christmas vacation, in the first week of January, 1928.

Outstanding was the fact that she had been a protected child, brought up under what we may label the English nursery system and provided with all the customary aids to what is implied by "good breeding." At the house on 51st Street, in the small drawing room of unimpeachable decorative scheme, the reporters could see a lifelike pastel portrait of the adolescent girl, revealing a development tinged with something of wistfulness and bewilderment at the threshold of life, a state possibly corresponding to the *otherworldliness* alluded to in the mother's interview. The qualities of this picture were emphasized in terms of biological and psychological traits as my inquiry progressed. As a child she had always been docile and pliable, without exaggerated submissiveness but with somewhat less of naughtiness than we might look for in a potentially maladjusted child. She did not, in fact, appear to have been maladjusted up to the time of puberty, which came late. Thus the first fourteen years may be described as a period of over-adjustment to a specialized environment considerably different in its requirement of initiative and self-reliance from what she was to find in the outer world. Living during the winter in New York and in summer mostly in the South Amherst home of the family, she had opportunity for varied recreation and healthy outdoor life. She rode horseback and played tennis but was never extraordinarily vigorous nor was she called upon to make any great trial of athletic strength or endurance. The record of illness is scant and not highly significant.

That she was a girl of sound morals, even in the Victorian sense, is fully believed by all who knew her; that she had received every care and attention, also in the Victorian sense, was equally beyond dispute. She had made no attempt to be an ultra modern girl, nor did her home environment call for it, but rather for efforts in adapting herself to a high standard of living where a premium was put upon artistic perception, poetic sentiment and elevated religious emotion. It is not without significance that Frances was instructed and confirmed in the Anglican communion by the Cowley Fathers of the church of St. John the Evangelist in Boston.

There are indications that reception into the Church and the expansion of religious feeling were easier developments than the other transitions of adolescence. At the age of fifteen, on going to Milton Academy, it was with regret that Frances passed from the tutelage of the lady who had been her governess for many years. But the break was mitigated by the fact

*Journal of Abnormal Psychology, 1914-21.

that during her first year at Milton she found an ideal home in a family where she fitted in as one of them, replacing, as it were, one of the daughters who was away. After attending Milton Academy as a day scholar, she went into residence. Thus the adjustment to her schoolmates was brought about by easy stages without ever throwing her heavily on her own resources. It is recorded that she was well liked, that she stood well in her class as painstaking in her work, that she was able to preside gracefully at meetings of a school literary society and developed a measure of zeal and ambition in school work.

The comparative ease and smoothness of the life at Milton may have paved the way for a considerable sense of disappointment when entering into the less intimately organized life of the college at Northampton. Yet even in her first term there she did not fall back on her own resources, since the family were in residence in their nearby home at South Amherst up till shortly before she went to New York for the Christmas vacation.

Evidently Frances retained a longing for the happy days of dependent childhood. This was not due simply to shrinking from the ordinary sense of growing up, nor yet from the normal trials of passing through school and college. For beyond anything of that sort she was called upon to adjust herself to a trying alteration in the home background that she had enjoyed so unquestioningly and idealized so implicitly in childhood. Specifically, the girl became worried over what she felt was the threat of a serious illness (scleroderma) that hung over her mother and which seemed bound to have a repercussion on her father. The girl and her brother admired the struggle their parents were making to overcome ill-health, while at the same time she was nonplussed as to how to make her own conduct lighten these shadows of invalidism. Young people do not easily give in to needful limitations, still less do they reconcile themselves to the irony of a fate that intrudes upon expected and permissible happiness; and Frances' childhood had been the foundation for every expectancy of unclouded skies.

It would be idle, as well as impertinent, to discuss how far this concern over the health of her parents was warranted by medical or psychological facts. She was not dabbling in medicine or psychology but only trying to adjust very obscure and confused feelings in her own heart and did not feel at liberty to discuss her forebodings of impending stress in the home life that had been so happy. A note written in January to her former governess, and later published, contains a hesitant revelation of this attitude and bears out many other indications that she was a tender-minded, not a tough-minded child, but that she had more contradictions of thought to deal with than she was capable of resolving. Small wonder, then, that this governess, on a visit at Christmas, noticed moments of absent-mindedness that Frances, herself, was unable to account for explicitly.

Attention was turned to an essay that Frances had written in school, stating that in case a girl was worried or depressed, she might do one of three things: she might commit suicide, or she might run away, or she might go home. It is impossible to say how deeply Frances had ever considered these alternatives or applied them to herself. At any rate, this essay led the investigators to give much consideration to flight and to suicide. It seemed to me more important to weigh the great dependency of the girl upon the home life, which would tend to offset the impulse that she had once spoken of as "wanting to live my own life." This, like "suicide," often comes to the lips without much depth of implication. And no fixed purpose appeared to have emerged out of the baffled state of mind that Frances had fallen into. Flight or suicide seemed too obvious explanations of her disappearance in view of the rather paradoxical state of her mentality as it came to light in my retrospective investigation.

This was particularly shown during the Christmas holidays, when she was ill at ease and showed a certain diffidence in her social attitude, which was more consonant with the *jeune fille* of the 19th century than with the flapper of today. On the boy question Frances had no wild ideas. Her feeling was rather the reverse of being boy-struck and she went so far as to explain her shyness and fatigue at a party by saying that she was not the kind who could expect to attract boys. But it would seem that the real reason she did not have a good time lay in a lack of vitality and buoyancy that had a medical, no less than a psychological, *raison d'être*.

In conference with the family physicians and by checking up the attitude of the girl in the home, it was possible to piece together the picture of a borderline condition lying across the frontier that separates, theoretically, the state of psychasthenia (Janet) and the status of neuro-endocrine disturbance. Whether the cycle of cause and effect that produced this condition started on the biological side or whether functional disabilities were brought about by psychological stress is a knotty problem; and like any Gordian knot, it could be contemplated at great length without getting anywhere. What matters is this: that the picture, as seen from the purely medical angle, showed no serious symptoms, while the psychological condition failed to present alarming signs of impending mental crisis. Yet the mental state proves significant enough when surveyed as part of the combination of somatic and psychic symptoms.

The great interest of this case is not the dramatic setting of the disappearance, so much as it is the background of that disappearance,

the study of which should teach us how to help cases like hers in the future. Toward this end already there are to be found here and there what are properly called "borderline psychoclinics" where medical men, physiologists, and psychologists can coöperate and give to the study of such a case their characteristic contributions. This tends to disclose the true state of bio-psychic balance of the individual, permitting a forecast of the dangers to which the subject is exposed by continuance in the existing course and affording relief by medical and psychological measures that may be skillfully interwoven in their working. Had mental hygiene reached the scientific standard and the position in our folkways for which various forward-looking people are contending, Frances Smith would have been drawn to such a clinic. Actually, all persons concerned gave intelligent attention to the question whether she should go back to college, making the best allowance they could for her state of mind and body. In the end, however, it seemed wise to put no pressure or inhibition upon her free choice and the question of going back to college was left to her depleted personality to resolve.

To describe her actual condition at this time would be difficult in the absence of such an ideal study as a borderline clinic might have undertaken so as to supplement the usual medical examinations with research into metabolism, endocrine function and emotional stress. But at the time it could reasonably be judged (in the present state of the art of personality study) that she mainly showed symptoms of fatigue and lack of vitality (adynamia).

One function in particular did show that it was reacting to the stress of maladjustment: that was the function of menstruation, which was irregular and had apparently never become firmly established. It is noteworthy that a large proportion of girls in the early college years show symptoms in this realm of physiology that would duplicate the menstrual disturbance of Frances Smith. But in her case this function was much improved during the holiday rest.

From the purely medical standpoint, it was found that there was nothing unusual enough in her health to make a return to college undesirable. Ideally, in the millennium of mental hygiene, the responsibility for advising whether she should stay out of college for treatment or what special supervision of her hygiene should be arranged for on return to college, would have been shared with the diagnosticians of the hypothetical borderline clinic above spoken of. For along with the physical adynamia there was a psychasthenia (Janet) probably complicated by a cycle of malfunction involving the endocrine system.

In cases of such endocrine imbalance we know that many functions get out of step with each other. One of them is the vasomotor function. This brings me to a special clue encountered in the reconstitution, inasmuch as besides the observed signs of a nonplussed emotional attitude, attention had been attracted to a remark she made in connection with putting away her bathing suit: she having dreamily reiterated the statement that she could not sink in water, dwelling on the fact that when she floated on her back she could not sink. However natural this comment might be in due context, it seemed to me that its occurrence in a setting of dreaminess carried special biological and psychological implications, in the light of experiments that I have conducted for the purpose of detecting vasomotor disturbances through subtle and delicate indications afforded by drowsy speech. To give point to this statement I must ask you to bear in mind an experience that is familiar to a large proportion of mankind, namely the so-called "Flying Dream." Under normal conditions it is an ecstatic sense of floating, soaring or flying in the air, or of stepping into space. It is distinctly different from the ordinary "Falling Dream." Its psychology has given me occasion to write about "The Illusion of Levitation" (*Journal of Abnormal Psychology*, 1918-19-20).

In experiments to study this condition I found that it was distinctly correlated with a vasomotor readjustment of the same physiological type as that which is manifested in hydrotherapeutic treatment when there is "reaction" to a cold shower. In most cases there is obvious flushing of the arterioles of the skin producing a sense of ease or even confidence amounting to an euphoria that is *sui generis*. The floating sensation is fairly diagnostic of such dreams. (The more extended discussion of this phenomenon is here omitted for economy of space.)

As a step in the technique of scientific guessing at the bio-psychic state of Frances Smith the supposed signs of the levitation illusion given by her attitude and remarks were made by me the basis of a somewhat extreme conclusion, to wit—that she was greatly influenced by a vasomotor disturbance and by the protean physiology that goes with it and thus nearer to a trance state than anyone could have realized at the time. By way of reconstitution, I formulated this guess rather positively in New York so that I should all the more definitely put it to the test of confrontation with such facts as might be obtainable in Northampton, to which point I then repaired for fresh information. Thus New York gleanings pointed to a specific condition of emotional conflict involved with physiological disturbances.

At Northampton, the first information I obtained was that Frances had been very scrupulous in her work, in spite of which she had fallen behind in her studies and was carried on the registrar's list of girls who were cautioned. Characteristic hesitations came to light, which might be interpreted as signs of scrupulosity (Janet) or of impaired mental synthesis (Janet). These indices fit in with the supposed

suspension of the more wide-awake "faculties" and hence with the supposition that Frances was liable to hysterical automatism or something like sleep-walking. But we must proceed to confront the theory with further facts.

On the second day of my visit to Northampton I learned that the girl had given the impression of aloofness from college life and I got a sharper impression that she had never become acclimated, i.e., "gotten into college." This added significance to the fact that, according to calendar, her disappearance occurred during one of the few weeks of college life when there was no prospect of her having the company of her family in the neighborhood. As hardly ever before, she was on her own resources, and what those resources were we have seen: they were impoverished not only socially but physiologically and psychologically.

It was revealed that on her arrival in Northampton it had been noticed at the railroad station how Frances was slow to catch the bus on its trips to the college; that her trunk had stood unopened in her room for days and that when a college mate came to encourage her to unpack it, her coöperation was deficient in that she would take articles handed to her and stand abstractedly without putting them away. Thus the theory of a trance originating in New York data gained force by confrontation with definite facts ascertained in Northampton.

In connection with the date of January 13, a peculiar circumstance came into view: there had been in the evening a heavy thunder storm with rumblings and showers, lasting till 2 or 3 Saturday morning. It is said that the girl may have been in her room during the storm, since the window, found open after her disappearance, had let in no rain as it might have done had it not been closed by her during the storm. Moreover, a wash-cloth was found moist enough to have been lately used. Although Frances was not afraid of thunder and lightning, it may be believed that this kind of summer weather in the middle of winter might bring a certain dislocation or disorientation in the train of thought of a girl in her borderline condition. It would seem almost natural that she would think of stepping out into the tepid air after the storm had cleared, she evidently not having gone to bed. At any rate, I tried to put myself in her position, standing under her window, which was two stories above, near the fire escape, assuming that she had come out through the rear door nearby, left unlocked as required by the fire regulations. The nearest exit from the campus is along the smooth driveway a few yards to the east, through a gate that is never closed, onto the great width of Elm Street. And across Elm Street is the way to Amherst. This I followed to see how she could have reached the crossing of the Connecticut River. There I considered possibilities without bias, having no previous knowledge of the locality and having purposely refrained from obtaining any in New York, lest I impair the reconstitutive value of a fresh outlook in and about the college. But now I learned that the students frequently walked to the Amherst side, ordinarily using the regular traffic bridge that prolongs the street and sometimes daring to cross the trolley-car trestle that spans the great stream in parallel close by. The two bridge-heads are so near together as to stimulate the mind to a hesitation of choice between them; for there is nothing about the surroundings that would seem forcibly to shepherd the wandering attention and the footsteps into the right orientation.

At this point the following conclusion seemed to formulate itself inescapably in my mind, that at the time of her disappearance Frances had had a yearning to revisit her family home and that in the bewildered state of mind she was in, the execution of the necessary moves was almost automatically carried out, as in a trance; but going at an unconventional hour on such a trip was dictated by more or less accidental circumstances, among which was the occurrence of the storm; that on the subsiding of the storm, she carried out her intent and proceeded, in a mood of false confidence due to her physiological state, to cross the trolley bridge from which, owing to deficient alertness in her instinct of self-protection, she fell into the swirling and ice-laden waters of the rushing river below, thus meeting her death from drowning.

As the weeks passed by, the only objection made to this theory was that the body had not been found. To deal with this objection it should be stated that on checking up with the Massachusetts Public Safety Department I learned that it is not at all impossible for a body to remain hidden indefinitely after falling into the river. In particular, a man was seen by reliable witnesses actually going over a dam near Holyoke and then obviously drowning and nevertheless his body has never been recovered. As for the ultimate reappearance of the body of Frances Smith I am sure that valuable indications may be given by members of the Massachusetts Medico-Legal Society; but enough has been said to show that the non-appearance of the body so far is no disproof of the theory submitted to you.

On the other hand, subsequent information seems to render it more probable. It is reported that Frances had written to a friend abroad about her state of mind in college, saying that she did "not know what it was all about." Also it was learned that she had been observed sitting in the church at Northampton between services as if seeking that particular form of comfort which is called recueillement or "collecting one's self." Lastly, it became known that on Saturday morning, after the storm, a woman living in a house about 400 feet from the bridge head on the Northampton side had happened to go down to her kitchen at an unusually early hour when, looking out of the window onto the street, she had seen a girl making her way at a

good pace along toward the bridge. The description that this woman gave corresponded in every ascertainable particular to that of Frances Smith.

In sum, the supposition that it was indeed she and that she was acting under the influences I have described renders unlikely the occurrence of either deliberate suicide or death through foul play. It puts the disappearance of Frances Smith in the class of tragic accidents that are due to a combination of circumstances in mind and body, no one of which taken by itself is expected to lead to a fatal outcome.

If presenting this analysis has value at the present time, it must lie in the field of preventive psychology. In other words, the lesson of this accident should dispose the minds of students, of their parents and of the officers of colleges and universities to discern the value of protective measures whereby such a combination of circumstances as may have led to the death of Frances Smith shall become infinitely less likely to occur. Such coincidences of mental and bodily conditions are not as remote as it might appear upon inspection of a few outstanding cases like this one. Those who seek insight into the lives of boys and girls in college are aware of the prevalence of what we may call *freshman blues* and know that the psychology and psychiatry and the pedagogy of the future must take thought for those borderline conditions that are to-day being too often overlooked through a lack of coördination among these scientific specialties.

In this direction, the first and most obvious suggestion is that every college or educational institution should plan to create a system of guide-ropes by which any student who is mentally at sea or adrift in a current of emotion can work himself back to safety, or be warned from going beyond his depth, as the case may be. For example, in a woman's college the system of having house matrons affords a means of anchoring such a guide-rope system firmly in each dormitory.* Whenever some special circumstance concerning the girl should attract notice, she could be encouraged to take hold of one or another guide-rope in the form of a consultation with the physician, or with the psychologist, or with the educational counselor, all of whom should be easily available at short notice. Under certain conditions these advisers would seek to supplement their own judgment by calling upon the visiting psychiatrist—for a certain number of girls in every college are deserving of attention from a clinician having in mind the entire gamut of psychopathic states. Thus would be constructed a cycle of influences into the working of which a student would be attracted as soon as she had begun to feel signs of distress, as naturally as a swimmer grasping out for a raft or a surf-rope or calling to a companion for aid in reaching safe support. It is not too much to expect that the college mates of maladjusted girls or even boys should learn that their own amateur efforts at first-aid, physical, mental or educational, can be supplemented by recognized academic functionaries. The whole cycle should be coördinated by some assistant dean, preferably one divested of all punitive responsibility, that is, in no way part of the coercive machinery of the institution. This is asking no more than a life guard at a beach. Indeed, there are girls' colleges where such cycles operate very well, not only to safeguard the girl who is in deep water but to take off the burden of responsibility from the girl's intimates and family circle, as well as to instruct college opinion how to recognize and deal sympathetically with such conditions, rather than to be merely shocked into stigmatizing them incorrectly as "insanity."

Preventive measures directed at picking out casualties of body or of mind before anything serious happens would not only prevent such tragic developments as that of Frances Smith but would have the more extensive and importantly economic effect of bringing protective hygiene into the lives of that numerous class of college students who, while at a long distance from real danger, would none the less greatly profit from a revision of their daily regime of life. They would gladly undertake this if they could get pointers from a cordon of special workers and of heads of college houses harmoniously organized. If such systems were established, the state medical examiners would be called upon less frequently to contemplate the end-result of insufficient provisions for mental hygiene among young people.

This exposition of a single case may give occasion for the members to gather other instances from their vast experience that may support the thesis here presented. However that may be, it is a great privilege to submit my conclusions to a Society that has done so much through its scientific work to transmute the gruesome lessons of calamity and tragedy into enlightened methods for safeguarding the public health.

Discussion

Dr. Hunt: This certainly has been a most illuminating talk and opens up great possibilities. Just how that wheel of preventive hygiene is going to be constructed seems rather baffling to an ordinary fellow like me! It seems to me that, as parents, we have got to know a whole lot more than we do now if we are to succeed in keeping our girls from situations like that one.

*It would be the matron's duty to keep in view a confidential abstract of the medical, psychological and academic records of each of her charges, explicitly setting forth what may be called the girl's *endurance rating* or index of possible failure in each essential subdivision of her life activity. The preparation of such records would afford great opportunities for service to a qualified mental hygiene worker. The fact that such a field of helpfulness is untilled gains credibility from the doubt expressed to me by a college head who said: "We had a resident psychiatrist on duty at the college for a whole year, during which only three cases were found to call for this professional service." The inference was that a mental hygiene worker would have nothing to do. This suggests the need of developing a specialty in abnormal psychology to fit the borderline and mild cases. There is always plenty to do.

I hope there is somebody in this audience who can arise to discuss problems like this. I invite anybody to step right up and start the discussion if he will.

DR. BRYAN: I was very much interested in Dr. Horton's paper. I am particularly gratified that the Doctor has seen fit to bring to you the very great importance of the emotional life in individuals. Look back in your own life and you will find that, after all, reason and intelligence have had very little to do with where you are today. We are entirely outside of what we are supposed to call intellect and reason and judgment, if you will. I just offer that for your thought.

There is a great world in the emotional life of every human being that nobody knows very much about. As you can conceive of an adolescent bursting forth into full bloom, all of these emotions becoming rampant, stronger every day —how well do you know of the battles, mental battles, emotional battles that these adolescent individuals who are in colleges today, go through. You ought to know something about it. Think back when you were 16. I have not the slightest doubt but that we could pick out isolated errors in conduct to make a pretty good case of insanity for any one of us.

I think Dr. Hunt has struck the note, our protection for our children is in being a good parent. I do not know what a good parent is, but I think it deserves a good deal more care and study than most of us are giving it.

I think his point that colleges are filled with these very problems is a fact of great importance. If you do not believe it, read the work of Dr. Kerns, who was for five years at West Point where the very pick of the youth of this country is found. It would be the last place in the world where you would expect this thing to develop and yet he has had many hundred cases among the boys with whom he has worked and has told of personal things that upset them—because they did not make the football game, etc.—things perfectly absurd to us, but of tremendous importance when we were 16 years old.

Look back over your own life and then you will realize there is something in this adolescent period that medicine cannot quite measure in the laboratory—still some parts of the human being that you cannot place on the scales and that part of the human being is a very potent factor in regulating our lives and causing the peculiar things we do.

DR. OSGOOD: I think we were expecting to hear a nice little talk on suicide and were disappointed when Dr. Bryan changed his title. For the past ten years I have been especially interested in focal infections and I have come to believe when we can eliminate some of the toxins that are floating through our blood, it will solve some of the great problems in psychiatry.

I was really intending to discuss the paper on suicide. I have seen so many cases of suicide in which there were focal infections that I believe it is the great predisposing cause for suicides; that these psychological problems which are commonly given as the cause of suicide are exciting causes but the predisposing cause is some real physical thing, toxins floating in the blood. Perhaps what gave me my first impression along that line was a patient whom I advised to have her teeth extracted for certain physical ailments and after they were removed she told me how much better she felt, how much better her stomach and heart were, and she said, "My suicidal thoughts are all gone."

Subsequently I used that as a key and I have quizzed a number of patients who have admitted that their suicidal thoughts disappeared with the disappearance of the streptococci from the mouth. My experience in suicide is not as large as would be that of physicians in the metropolitan districts; probably Dr. Hunt sees more cases of suicide than I do.

I saw a man who had what he said were terrible headaches; he wanted something for his nerves, but he had a mouth full of infection. I advised him to have his teeth extracted; it was not done and six months later I saw his body with two bullet wounds in it—a suicide. I saw a woman who was mentally disturbed and I tried to accomplish the same purpose but was unable to do it. A year later I cut her down as she was hanging by the neck. These are not isolated cases; I could quote a good many similar ones; in fact, if you will take notice of people's mouths in cases of suicide, you will rarely find a person who does not have some evidence of infection. It will be manifest, however, by a gold crown, an old root or a heavy filling and those teeth, if extracted, would show the streptococci; it is the streptococci usually or bacilli floating in the blood that give off toxins that cause these disturbances.

As to Dr. Horton, his analysis was very interesting but not every one is enough of a psychologist to go into the thing as he has,—take these subjects in a sort of philosophical way. The practitioner sees the possibility of another picture.

This Association is frequently called upon to handle cases where the main abortionist has attempted to dispose of a body that has come into his possession. He profits by previous experience and instead of putting it in a suit-case or dumping it in the water, he perhaps has devised a means of disposing of such bodies so nobody would ever find them. Would it be possible that this body could have been disposed of by some abortionist? The fact that this woman was not menstruating for two months—wouldn't it hint or suggest a pregnancy? I had a patient once whose mother told me it was impossible that her daughter could be pregnant as there had never been any opportunity; however, we delivered this woman of a child later.

The convenience of the fire escape, to which Dr. Horton alludes, made access to the room

easy, although you could assume that such a thing would not happen.

The fact that in December she menstruated could suggest taking something, and doubtless in desperation she sought help elsewhere. She might have gone into the hands of an abortionist and he cremated her body; there is just a possibility of something else occurring besides suicide.

DR. LANE: I have had several of these people who, under stress of mind, ran away. I had an interesting case of a nurse who was in training with me at the time. She went to another general hospital. At that general hospital she was put on night duty alone for the first night with forty babies to care for. She did not know what to do; the babies were all crying, she could not find any head nurse; she was a very conscientious girl. She just walked out of the hospital, took the trolley cars and went to Boston and brought up near Northampton—just rode the trolleys as far as they went. Her mother brought her back from Northampton to me to talk over the question the next day.

That girl did not know what to do. She was afraid to report, afraid she would be expelled from the training school. I think the hospital was at fault. I have known her and when she gets into stress and trial, she has what is ordinarily called an attack of hysterics.

At the Adams Nervine we receive patients who are not insane, but I would like to fill it up with these adolescents. I have had many cases that are slow and that often have to stay with us a year; they are moody, cannot concentrate, they are not committable, but they are going through this adolescent psychosis; I call it this for short. Now I have six or seven applications from women and one from a man; the Nervine is open to any town in Massachusetts.

Mental disease is not peculiar to women, but in this sort of thing,—emotional unbalance, and affairs of that sort, women are in the majority. I think the women's colleges should have somebody on their medical staff who is in sympathy with these adolescents to study them and work with them, especially women's colleges. Yale has this system. It is such colleges as Smith and Wellesley that ought to have such a person on duty at once because there are a lot of freshmen who are having their stress and trials.

I had a grown woman come to me because her pet dog had died. It is these trivial things that will bowl over an unstable woman. Unfortunately, there are a lot of cases like that of Frances St. John Smith. Supposing she had come to the Nervine; it would not have been safe to hold her—practically we could not have held her. There is where every alienist has his dilemma—here is a person who is possibly suicidal; where are they to go? They need a certain amount of restraint. A person wanders away, goes out and does not come back. Nothing has happened to justify me to commit them: they have the impulse and the opportunity.

DR. HUNT: It seems to me what Dr. Horton told of the large numbers who have gone over the bridge would be a matter that some of this medical examiner group might have a knowledge of; that has to me a sound that does not seem to ring true.

DR. HORTON: It was specifically stated to me that there were foreigners, workmen, etc., who had disappeared—last known to be accustomed to using the bridge and never heard of after a given day. The river is not patrolled.

DR. HUNT: It seems to me if the body of anyone went in the river there, it would reappear. There were some deaths on Long Island Sound, but most of the bodies have appeared. They were washed back and forth until they were landed either on Long Island or on the islands in the sound or back in the main land. Perhaps you know the Connecticut River is not especially wide right there; all the water goes into the canal.

DR. BRICKLEY: One spring we took from the harbor seven bodies. One came up in March which went down at Christmas. The body should be found when the gas has formed sufficiently, provided that the body was not torn open or broken. If the body is clothed, it will last for a long while, but if lightly clad, will not. I cannot conceive of a body washed under a rock. . . . A body will rise even six months later, as I have seen happen right in the harbor here.

I had another thought: inasmuch as a young Boston University student (this came out in the newspaper) said he had travelled from here to California and all he spent was $21.00, it would be no great task for a good looking girl to get a lift and go farther. If the girl left at daylight, she would have no trouble in travelling, especially when she originated in a college town.

DR. SCHNEIDER: Why would she take a trolley bridge rather than a foot bridge?

DR. HORTON: They are six yards apart. I was thinking the preference for taking the trolley bridge was the feeling of seclusion and the desire of not meeting automobiles.

DR. HORTON, in closing: I feel very much indebted for the opportunity to hear opinions both for and against the hypothesis that underlay my somewhat rambling presentation. I think my reaction to the suggestion of a possible abortion with fatal results is a little different than might be thought. It is a relief to me to have that discussed by an expert. At the same time, in justice to the girl's memory, I think it is only fair to present what I think is the contrary evidence. Without questioning the ex-

pertness of the doctor's knowledge of the way such things have been done by criminal men, the argument is this, that the entire mass of evidence of a squad of 16 detectives and innumerable assistants, getting data from all sources, was of such a nature that had there been any sign of any kind given forth by this girl of being interested in boys or knowing that she was being noticed by boys or by a man in college or elsewhere, it would in some way have been revealed.

Everything was considered. We started in with the "low down" of the "hard boiled" reporters. It seems to me that, with all the searching by deliberately hard boiled individuals who were used to picking up clues, there would have been no loophole left for a romantic adventure to escape notice. The consensus of opinion is that the usual sort of thing (pregnancy and abortion) would not have done as a clue; although the possibility as stated by the Doctor, of course, looms up and cannot be combated except by special reasons for a very great faith in the girl herself.

As to the body floating, she was well but not very heavily clothed, which may have something to do with her non-appearance.

The experience that Dr. Lane cites with reference to borderline cases, seems to me to be a most helpful amplification of what I have said about a young person falling into a confusion of mind and behaving like an automaton when nonplussed by some situation. I did not realize that the problem of these borderline cases had been so fully worked out at the Adams Nervine and I am much interested that Dr. Lane's data give a backing, psychiatrically, to the picture of the case that I have presented.

Dr. Bryan's general comment on the importance to young people of the seemingly trifling things seems to me to promise a great step in the understanding of the emotional problems of the young. In fact, his presentation of the matter, taken in connection with his earlier paper, is of the highest augury for the New Psychiatry.

SUPPLEMENTARY NOTE

On March 29, 1929, the body of a girl was found in the Connecticut River at Longmeadow near Springfield. The next day it was positively identified as that of Frances St. John Smith, by the family's New York dentist. It was remarkably well preserved considering that it showed external signs of having been in the water for over a year. A thorough study and autopsy by the Medical Examiner, Dr. Frederick Jones of Springfield, disclosed nothing on which to base any theory of violence, of suicidal intent, or of the existence of any condition that would motivate suicide. Frances Smith was buried near the South Amherst home toward which (according to the theory in the foregoing discourse) she was making her way at the time she fell into the river.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 15491

SLEEPLESSNESS, NERVOUSNESS AND TINGLING OF THE EXTREMITIES

NEUROLOGICAL DEPARTMENT

PRESENTATION OF CASE

BY VIRGIL CASTEN, M.D.*

A chauffeur's wife thirty-two years old came to the Emergency Ward June 7 complaining of sleeplessness, nervousness and tingling of the hands and feet. The tingling of the hands and feet began about two weeks before she came to the hospital. At this time she became so very nervous that she went to a druggist, who gave her some medicine which made her sleep. Her doctor said it was probably morphia. She also got some medicine from a nerve specialist. What those two medicines were we do not know. The patient said she had always been well until the present illness but not strong. She gave a history of drinking a great deal of wine during the past year. Both she and her husband got very intoxicated about once in two weeks. A week before admission she got very angry in a neighborhood fight. Some small child did something to one of her children, and while in a rage she suddenly lost her voice and could not swallow. This condition cleared up so that at the time she came in she could talk fairly well and did not have much trouble in swallowing. She had extraordinary dreams of impossible things taking place, also delusions and hallucinations.

She had had typhoid and pneumonia in her childhood and frequent attacks of tonsillitis. Eleven years before admission she had one miscarriage at six months which she thought was due to a fright. Shortly after this she had rheumatic fever, which recurred about one year ago. She was in bed for a month. In 1928 she was in a hospital for a second attack. During the same year she had a pelvic operation in that hospital. We do not know exactly what it was. She complained of marked palpitation in crowds, and could not climb stairs. She slept more comfortably with two pillows than with one. Her legs and ankles had been swelling slightly since her last attack of rheumatic fever. Her bowels were constipated. She had occasional vomiting at night after overeating. A few years before admission she used to have cystitis and dysuria. She urinated once at night. She had leukorrhea after childbirth. The summer before admission she weighed 180 pounds. Her present weight was 165.

In giving the history her memory was not very good and she had delusions and was restless and emotionally unstable, often weeping. Nevertheless her history checked fairly well with that given by her husband.

Physical examination showed a well developed and well nourished, nervous woman. The only positive findings were that the heart was slightly enlarged, left border 10 centimeters from the midline, apex in the sixth interspace, sounds loud and rather harsh. At the apex there was a systolic murmur and a possible diastolic. No thrill was palpable. Blood pressure approximately normal, 95/70 to 100/70. Pulmonic second sound greater than aortic second. Ankles swollen and pitted a little.

Neurological examination showed that the cranial nerves were negative with the exception of the seventh, which showed emotional weakness. This could be definitely noticed when the patient was smiling or talking. She complained of difficulty in speaking and swallowing, but this was more subjective than objective. There was no other weakness or paralysis. She coöperated very poorly however. She was extremely high strung and neurotic in appearance and action. Sensation was negative to hot and cold. Romberg was negative. No ataxia. Her finger to nose and heel to knee tests were negative. The knee jerk on the left side was definitely increased. There was also definite ankle clonus and a Babinski on the left. Because of these findings—slight difficulty in speech and swallowing, clonus, Babinski and the questionable emotional facial paralysis,—she was advised to enter the Neurological Ward for study.

She entered the ward June 7. The red blood count was 4,310,000, the leukocyte count 14,400, the hemoglobin 60 per cent, the smear normal. Urinary findings normal. Wassermann negative. X-ray of the skull was negative. A lumbar puncture was done. Initial pressure 120, dynamics normal, sugar and other chemical tests negative, three red blood cells present, whether contamination or actually in the fluid I do not know. Her temperature at admission was 100.4°, pulse 90, respirations 20.

For one week she was in the same condition as at admission. Her bed was near the window, and she was continually complaining to the head nurse that the devil was coming in the window, etc. She was having fights with knives and guns during the night. In the morning she had to tell these pitiful tales, and seemed very much frightened. June 15 the visiting staff had just left her when they were called back. She had suddenly become worse. Her pulse had jumped to a very fast rate—nearly 200, apparently a typical attack of paroxysmal tachycardia. She

*Recently interne on the Neurological Service.

had severe pain in the left side at about the eighth or tenth rib. She appeared exceedingly apprehensive and was very dyspneic. There was a pulse deficit from that time of 36 to 82 beats. After she was given morphia the tachyeardia subsided, but the dyspnea remained. Respirations from June 17 on were 30 to 38. The temperature had a terminal rise to 106°. She died very suddenly during the night of June 18.

DR. CABOT: Was there marked cyanosis?

DR. CASTEN: There was no cyanosis at entry.

DR. CABOT: Was there any dyspnea?

DR. CASTEN: There was no dyspnea at any time except when she went up a flight of stairs.

DR. CABOT: She was not unconscious?

DR. CASTEN: She was very conscious and knew something had happened, and was also very apprehensive.

DISCUSSION

BY RICHARD C. CABOT, M.D.

I do not know what she died of. Of course we have alcoholism, which accounts for a good deal; but she had plenty of time to get that out of her system. Her hallucinations were probably of alcoholic origin. But I do not see how we can connect alcohol in any way with her death. She may have a heart lesion. The statement about murmurs seems a little indefinite, but I do not know how her heart lesion can be the main cause of her death. Certainly there is no evidence of passive congestion or cyanosis. There is no evidence of embolism. That of course produces a form of cardiac death quite different from that due to passive congestion. I cannot make it a cardiac death. I cannot make it alcoholic. Alcoholics get syphilis rather more than other people; but I do not see any evidence of syphilis in this case. We have evidence suggesting hemiplegia,—Babinski and clonus and weakness of facial muscles. I am inclined to think she had a brain lesion. But when I try to go further than that I do not find much support. What brain lesion? It does not seem like any of the ordinary vascular lesions which ordinarily give coma at the end even if they do not give hemiplegia. It does not seem like hemorrhage. It does not seem like brain tumor. We have no symptoms of that so far as I can see. It is not at all the picture of general paralysis of the insane. It is much easier to go on enumerating things she has not got than to say with any probability what she has.

A STUDENT: Our record says her ankles were edematous.

DR. CASTEN: When she came to the Emergency Ward she had slight pitting edema of the ankles which remained about the same until June 15. At the end she did have marked edema.

A STUDENT: The heart was irregular.

DR. CASTEN: The heart was irregular but not very fast when she came in,—80.

A STUDENT: Don't you get cerebral embolus in rheumatic heart disease, especially when the heart is irregular?

DR. CABOT: Yes. Cerebral embolus gives coma or paralysis, and it is true that she did have some suggestion of paralysis earlier. But at the end I do not see what she died of.

A STUDENT: What about the pain in the left side?

DR. CABOT: That suggests pulmonary or renal or splenic embolus. Pain in the side would go perfectly well with that. I have rarely heard, however, of a person dying with absolutely no cyanosis from pulmonary embolism.

A STUDENT: Could she have had embolism of the spleen?

DR. CABOT: Yes, but that could not cause death. It is the most harmless thing in the world. Occasionally an embolus goes septic; but this did not.

A STUDENT: Could this be coronary occlusion?

DR. CABOT: We do not have the pain which we expect; but there are quite a good many cases of coronary occlusion in which death occurs with no pain. So absence of pain does not rule it out.

A STUDENT: Wouldn't pain in the left side go with it?

DR. CABOT: I certainly never heard of any pain from coronary block down there in the left axilla. It is news to me if it is possible.

A STUDENT: Could this have been a pulmonary embolus?

DR. CABOT: Yes, but it did not kill her.

A STUDENT: It might account for the pain.

DR. CABOT: I am trying to account for the death. I am inclined to bet against it, but it is better than any suggestion I have made.

A STUDENT: Would not a cerebral embolus give paralysis?

DR. CABOT: Yes, but we should expect it to give coma. Was any electrocardiographic examination made?

DR. CASTEN: That was asked for, but at the time they were too busy and when we got the appointment the patient was gone.

I saw her about eleven o'clock the night before she died. She died about three-thirty or four o'clock. She was quite dyspneic then. The respirations were about 30 to 40, though they had been for a day.

A STUDENT: Is there a chance that she died that night at three o'clock from a sudden attack or progressive attacks that happened the day before?

DR. CABOT: Would not the nurse have reported it?

A STUDENT: We do not know whether she had pain.

DR. CABOT: Probably if there had been much pain we should have known about it. Angina is the sort of pain that they do speak of.

A STUDENT: Was she put upon digitalis? If she was not, why wasn't she?

DR. CASTEN: The reason she did not have

it is that one medical consultant said to give it to her and another said not to. The day after admission one of the medical men saw her and advised slow digitalization over four or five days' time, and said there was no need for hurry. When on the 15th a sudden attack came on, another medical consultant saw her and asked to have digitalis omitted for the present. She had not had over nine or ten grains at that time.

DR. CABOT: So they had begun to give digitalis. We do not know what there may be in the heart. We have not much evidence on which to found a diagnosis of valvular lesion. That is possible but not very probable. I do not see any evidence on which to found a diagnosis of the kind of myocarditis that can kill anyone, that is a gross lesion of the myocardium. If it were of the hypertensive type we should expect a hypertrophied and dilated heart which gives out without any other lesion to show for it, and the clinical examination does not give any evidence to show that. I have a feeling there is something wrong with the heart, but I cannot name it. I also have a feeling that she had an embolus which went somewhere. I do not know of any better suggestion than that it may have gone into the coronary.

A STUDENT: Could this have been an infarct of the kidney?

DR. CABOT: I should not like to deny it, but I do not know of any such evidence.

A STUDENT: Could you consider subacute bacterial endocarditis on top of rheumatic endocarditis?

DR. CABOT: In any extensive articles on that disease you always find accounts of cases that are silent or latent. We can have the disease without fever or murmurs. So far we have nothing but the suggestion of embolism, which does not point particularly to a septic focus.

A STUDENT: Can alcoholics show definite ankle clonus?

DR. CABOT: Yes. That has been shown many times in police stations.

A STUDENT: Should you consider the high temperature at the end due to thalamic injury?

DR. CABOT: I do not know any type of temperature that goes with that injury, so I am not able to say anything about that.

A STUDENT: Could it be necrosis of the cord? One of the symptoms present in this case was tingling. Also don't they die of something wrong with the heart?

DR. CABOT: I never heard of a death from that cause with a clinical picture like this or with a short history. I think I am willing to bet heavily against that diagnosis.

A STUDENT: How would you rule out pulmonary embolism?

DR. CABOT: By the lack of any evidence of cyanosis.

A STUDENT: Could cyanosis develop between eleven and three?

DR. CABOT: Of course there is room for doubt as to the observation there. But in the vast majority of cases the nurse would not allow the house officer to sleep through such an event. It is a fairly spectacular thing, and the house officer is usually called.

A STUDENT: How sudden could that kind of death be?

DR. CABOT: There is no limit so far as I know. It could be absolutely sudden, in a few seconds.

A STUDENT: How much morphia did she have?

DR. CASTEN: About one grain in six doses following the severe attack.

DR. CABOT: She got about one grain within thirty-six hours. I do not think that would kill her, especially with the respiration where it was.

A STUDENT: Could the first symptoms be early signs of cerebral disturbance rather than alcoholism?

DR. CABOT: I would not deny it, but I have not seen it in connection with more definite symptoms than she has.

A STUDENT: What was the hospital diagnosis?

DR. CASTEN: The hospital diagnosis was hemiplegia caused by a cardiac embolus.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Rheumatic heart disease.
Auricular fibrillation.
Cerebral embolism.

DR. RICHARD C. CABOT'S DIAGNOSES

Cardiac disease.
Embolism, perhaps of the coronary artery.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Chronic rheumatic endocarditis of the mitral valve with stenosis and insufficiency.

2. *Secondary or terminal lesions.*

Thrombus in left auricle.
Cerebral embolism with encephalomalacia.
Infarct of the spleen, recent.
Acute passive congestion.

3. *Historic landmarks.*

Emboli in the kidneys, old.

DR. TRACY B. MALLORY: I have the cross sections of the brain here. I think you can see even from your seats the definite area of softening on each side of the internal capsule. The latter though running right through the center of the softened area is but slightly involved. There was another older softening found in the left temporal lobe, quite small, only half a centimeter in size. The heart weighed 320 grams, which can hardly be called hypertrophied, but it was greatly dilated. The transverse measurement of the heart *in situ* in the

body was 17 centimeters. Three of the cavities were markedly dilated, the right more than the left. We found a very large thrombus in the left auricle. There was a fresh infarct of the spleen, which possibly accounts for the pain on the left side. There was no pulmonary embolus and no evidence of a very fresh cerebral embolus. These things must have been present certainly days to weeks, so that I cannot really explain the sudden death, although we have suggestive evidence of an acute decompensation in the presence of acute dilatation of the heart. There was very definite mitral stenosis, but the mitral valve still admitted the tip of one finger quite easily. It is unusual to see so sudden a decompensation as this in mitral stenosis.

A STUDENT: Was there passive congestion?

DR. MALLORY: There was little chronic congestion but fairly marked acute congestion. The period of decompensation was evidently short. There were scars of very old emboli in the kidneys which must have been there months to years, much older than the one in the spleen.

DR. CABOT: What do you think caused the cerebral symptoms?

DR. MALLORY: Emboli. There is no question as to that.

A STUDENT: Was there necrosis in the medulla?

DR. MALLORY: I have not seen the sections, but there was nothing in gross. I should not be surprised if we did not find anything.

DR. CABOT: I think we can say to comfort ourselves that if we had had any good evidence of mitral stenosis we might have made the rest of the diagnosis right. Cerebral embolus is a common complication of mitral stenosis. I was not able to conceive what the cardiac lesion was.

A STUDENT: After you get to the stage of edema you don't have a murmur, do you?

DR. CABOT: She was in the hospital long enough before known passive congestion set in. Which side were the brain lesions on?

DR. MALLORY: The right.

CASE 15492*

A CASE WITH POSTOPERATIVE COMPLICATIONS SHOWING UNUSUALLY PUZZLING X-RAY FINDINGS

SURGICAL DEPARTMENT

PRESENTATION OF CASE

BY CORNELIUS V. KILBANE, M.D.†

A man aged forty-nine was admitted October 7 and died October 26 after nineteen days in the hospital.

Ten years ago the patient occasionally complained of heartburn, gas formation and occasional pain in the stomach occurring after meals. Two years after the original complaint he had a gastro-intestinal series of X-rays done at another hospital and was then told of having a suggestion of ulcer. Evidently he had been satisfied for this length of time with relieving intermittent attacks with baking soda. He was in his usual good health until two days before admission, when he noticed an annoying cough and distressing pain in the epigastric region relieved after eating by taking baking soda. Nine hours before he was taken into the hospital he was suddenly seized with severe substernal pain which caused him to double up. This was shortly followed by attacks of vomiting. The pain persisted in spite of whatever he did. His physician gave a hypodermic of morphia and an ice bag to the abdomen. Relief lasted only for three hours. Then pain recurred and continued, very severe. He had no vomiting. The urinary and cardiorespiratory tracts were negative.

Physical examination at this hospital showed a well developed and nourished white male forty-nine years of age. The only positive findings were in the abdomen. The upper abdomen showed marked board-like rigidity. There was moderate tenderness and rigidity in the right lower quadrant. Blood pressure 145/85. The leukocytes upon admission were 9,500.

DISCUSSION

BY GEORGE W. HOLMES, M.D., and Members of the Staff of the Roentgenological Department

DR. JOHN SPROULL*: With sudden severe epigastric pain and board-like rigidity—granting that the rigidity of the abdomen is board-like—the most probable diagnosis is duodenal ulcer, ruptured.

*A visitor.

DR. MARCY L. SUSSMAN: Why duodenal ulcer?

DR. SPROULL: Because duodenal ulcers rupture more often than gastric. He is well nourished. Well nourished people do not usually have gastric ulcer. Usually thin people have gastric ulcer and well nourished people have duodenal ulcer. An X-ray film of the abdomen would help to differentiate from coronary thrombosis. A ruptured duodenal ulcer would probably have free air in the peritoneal cavity.

DR. WILLIAM H. VAN WART: I should think you would have to consider ruptured inflamed gall bladder.

DR. LESLIE SYCAMORE: If it is not ruptured ulcer, acute pancreatitis is a possible diagnosis. It is not very likely.

FURTHER HISTORY

DR. KILBANE: The clinical diagnosis was perforated duodenal ulcer. The patient was operated upon. A perforation was found just distal to the pyloric ring, and was sutured. He was apparently making a satisfactory recovery until about seven days following the operation, when

*Discussed at the Seminar of the Roentgenological Department November 6, 1929.
†Assistant Resident Roentgenologist.

the temperature suddenly shot up. The white blood count at that time was 18,600. It steadily mounted to 52,000 the day before his death. The prognosis was grave. There was considerable dullness at the base of the right lung. The question of pneumonia came up, and shifting dullness and the possibility of fluid was then considered. He was sent to the X-ray Department. The X-ray report is, "Dullness at the right base extending to the level of the sixth rib in the axillary line and the eighth interspace on the right side of the vertebrae. What appears to be the diaphragm is outlined in its lower border by a collection of air with a shifting fluid level below it. The air bubble is at the level of the seventh intercostal space posteriorly. There is evidence of a large pleural effusion above the diaphragm and fluid and air below the diaphragm. Respiratory excursion of the diaphragm is absent, suggesting that the fluid is pus. A plate of the urinary tract fails to show the kidney outline. A few flecks of barium scattered along the appendix and cecum. No visible stones."

DR. AUBREY O. HAMPTON: That center plate was taken with the patient lying on the left side. It shows possible fluid shifting below the diaphragm. The plate on the right shows dullness which obliterates two-thirds of the right lung.

FURTHER DISCUSSION

DR. SPROULL: You may get free fluid above the diaphragm and pus below. You get a fixed diaphragm in either case. Did he have any chills?

DR. KILBANE: He had no chills throughout the entire course of his sickness.

DR. HAMPTON: Some cases of subdiaphragmatic lesions that we have seen have had fluid above the diaphragm. That fluid may be due to perforation in the diaphragm or to an inflammatory reaction from diffusion through the lymphatics of the diaphragm. I think it is an academic point whether there is or is not pus above the diaphragm. We do not know from the X-ray. We have cases with perforation in the diaphragm just like that. We ought to have air above the diaphragm in that case, but we have not. We have only one film taken to demonstrate the fluid level.

DR. SPROULL: I do not see any proof as to whether that air is below the diaphragm or in the pleural cavity. You would explain this as a definite air-containing cavity below the diaphragm?

DR. HAMPTON: Yes, because it appears at about the level of the eleventh rib on the right side between the liver and the ribs.

DR. JOHN I. BRADLEY*: You would not however be willing to make that diagnosis definitely?

DR. HAMPTON: It is between the liver and the thoracic wall. There is no structure there that could contain gas except the hepatic flexure of the colon. I doubt if that would be as high as that. I think I will make the diagnosis of subdiaphragmatic abscess. You could see the structures that would move if the diaphragm moved.

DR. SUSSMAN: Provided the diaphragm is above that area.

DR. HAMPTON: The diaphragm would have to be above that if it was not unusually low.

DR. BRADLEY: Would the diagnosis on that plate be subdiaphragmatic abscess and pleural effusion?

DR. HAMPTON: Yes.

DR. BRADLEY: What would you say about the condition of the lung on the right?

DR. HAMPTON: He might possibly have a secondary pneumonia.

DR. SYCAMORE: The lung should be atelectatic.

DR. SPROULL: The thing that puzzles me in this picture is, if this is below the diaphragm, where do you get the fluid above the diaphragm? Where has the fluid above the diaphragm gone in the second plate? Were they taken the same day?

DR. HAMPTON: The second plate was taken a day later than the first. Perhaps they drained the patient in the meantime.

DR. SUSSMAN: The second plate was taken with the patient lying on his back.

DR. HAMPTON: Was there any story of tapping?

DR. KILBANE: No.

DR. HAMPTON: I do not think he had so much fluid in his chest as there appears to be. Let us take a vote.

DR. SYCAMORE: I think he had a subdiaphragmatic abscess with probably a high diaphragm and some fluid of unknown nature in the chest. The lung is partially collapsed. If it is purulent fluid there is probably inflammation in the lung. If it is serous fluid the lung would not be involved.

DR. SUSSMAN: I think it is subdiaphragmatic abscess with pneumonia of the right lower lobe with a small amount of fluid.

DR. VAN WART: Subdiaphragmatic abscess with pneumonia of the right lower lobe and very little fluid in the chest. The lung is involved slightly. There is some fluid above the diaphragm, but very little.

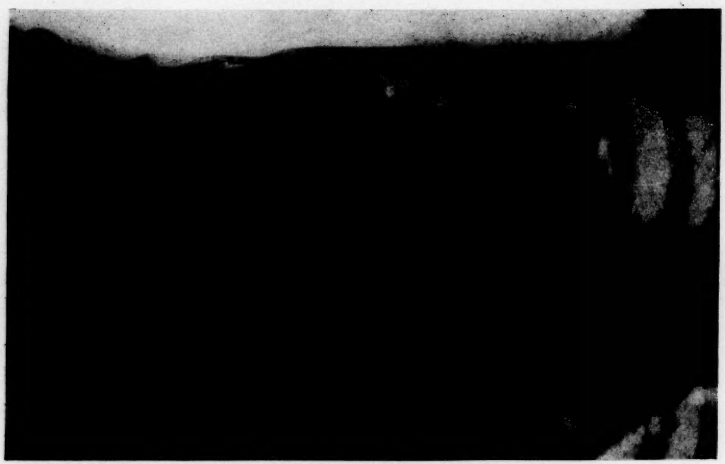
DR. ROBERTSON*: I agree with that.

A STUDENT: Subdiaphragmatic abscess with secondary pneumonia and much fluid above the diaphragm.

DR. SPROULL: It is probably a subdiaphragmatic abscess. I do not see any reason for supposing he had pneumonia. There is probably a small amount of clear fluid above the diaphragm, secondary to the process below the diaphragm.

*Assistant Pathologist.

*A visitor.



Anteroposterior view of chest and upper abdomen taken with the patient lying on his left side October 23. Shows shifting fluid level.

DR. GEORGE W. HOLMES: The first thing one notices is the obvious dullness in the right side of the chest occupying at least half the lung space. The surprising thing about it is that the heart is not displaced. With a diaphragm pushed up to that height I should expect the heart to be displaced. When we have a large amount of fluid in the chest and the heart is not displaced, the lung is either collapsed or destroyed. When we put the patient on his side we have a bright area in the upper part near the axillary border which has a lower margin characteristic of fluid. We now have evidence of air and fluid in the dull space. That of course would go very nicely with collapsed lung and fluid in the chest. It would also be present with fluid and air in the abdomen. The outline of the shadow itself is more like that of fluid in the chest. Dullness due to upward displacement of the diaphragm we expect to be sharp and curved, just the opposite of what this is. Another possibility is that he has pus both above and below the diaphragm. When we have abscess below the diaphragm the infection often passes through and involves the pleura so that we get fluid accumulating there. The position of the diaphragm is just below this bright area and the dullness above it is the fluid in the lung. I should say the pleural space is involved anyway. There may or may not be involvement below the diaphragm. If the process is below the diaphragm it has a perforation. Free air in the abdomen either means a recent operation, artificial pneumoperitoneum or perforation.

DR. SPROULL: That was taken a long time after the perforation was closed.

DR. HOLMES: It is possible that this was air the surgeon left in the belly. But we do not expect it so long after operation.

DR. SYCAMORE: That picture was taken ten days after operation.

DR. HOLMES: I do not believe it is free air in the belly that the surgeon left and I do not believe it is free air from the perforation before the operation. He may have had a perforation since then, of course. There is nothing in the lungs that we are able to see to suggest a cause for fluid. My impression would be that the process is more likely to be in the lung than below the diaphragm, and still more likely to be both. It must be in the chest, but probably came from below the diaphragm. If this gas bubble is in the chest it represents pyopneumothorax. The important thing to decide is whether it is above or below the diaphragm.

DR. HAMPTON: Don't you think that bubble extends fairly low?

DR. HOLMES: No. If this patient had been in such a condition as to make it possible to carry the examination further it would be easy to answer that question. It would be away down here in the abdomen. If in the chest it would stop at the level of the diaphragm when the patient's hips were elevated. I suppose this examination was made with a portable X-ray and was not fluoroscopic.

DR. SPROULL: If you had to give an opinion would you say that that air bubble was above or below the diaphragm?

DR. HOLMES: I cannot answer that question with any certainty because the examination is incomplete.

DR. HAMPTON: I committed myself to the statement that the gas was at about the level of the eleventh rib.

DR. HOLMES: There is a good deal of distortion in those plates. I suppose one might say which one thought most likely. After all it is a guess. I have no right to go any further than I have gone. But if I had to make a bet it would be on air in the chest.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Perforating duodenal ulcer.
Subdiaphragmatic abscess ruptured into thoracic cavity.

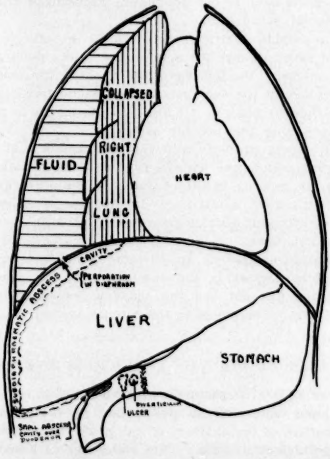
ANATOMIC DIAGNOSES

1. *Primary disease.*

Ulcer of duodenum with sutured healed perforation.

2. *Secondary or terminal disease.*

Subdiaphragmatic abscess.
Perforation of diaphragm.
Pyopneumothorax, right, with collapse of right lung.
Diverticulum of duodenum.



DR. BRADLEY: This drawing represents diagramatically our findings. The peritoneal cav-

ity contained no free fluid. There were adhesions between the first portion of the duodenum and the liver, and there was a small cavity just over the first portion of the duodenum. There were a number of shallow irregular cavities along the under surface of the lateral portion of the right lobe, between it and the diaphragm. There was a small perforation in the diaphragm. The right pleural cavity contained a large, unmeasured amount of thick greenish yellow turbid fluid. The right lung was markedly collapsed, being about one-half the normal size. The apex of the heart was slightly deviated upward and to the left, but the heart itself was not displaced. Nothing was found to account for the fact that it was not.

DR. HAMPTON: Was the lung consolidated or collapsed?

DR. BRADLEY: It was diminished in size, noncrepitant, moderately firm but elastic in consistency and on section showed no evidence of consolidation.

DR. SPROULL: Do you think the collapse of the lung was the result of pressure of fluid alone? That collapsed lung seems to be the result of something besides pressure.

DR. BRADLEY: The appearance was that of a lung collapsed from pressure of pleural fluid, and the resident who performed the autopsy felt there was sufficient fluid to account for it.

DR. SPROULL: He could have fluid and air in the thorax, could he not?

DR. BRADLEY: Yes; we did not determine the presence of air however, as we did not open his chest under water.

DR. SPROULL: Your final diagnosis must be pyopneumothorax, at least on that side.

DR. BRADLEY: That is the usual finding.

DR. SYCAMORE: What was the date of autopsy?

DR. BRADLEY: The 26th, two days after the last plates were taken.

DR. SUSSMAN: The upper lobe does not appear collapsed in the films.

A STUDENT: I remember seeing that autopsy. I do not think that the upper lobe was collapsed as much as the lower.

DR. BRADLEY: I was not present at the time the chest was opened, but the record does not mention any difference between the condition of the upper and that of the lower lobes. However, it would be reasonable to expect that the upper lobes would not be so much collapsed as the lower.

DR. HAMPTON: That plate would demonstrate a rapidly increasing fluid.

DR. VAN WART: Where was the diaphragm?

DR. BRADLEY: It was at the fourth interspace on the right.

BETTER PAY FOR MEDICAL EXAMINERS

At a hearing before a special commission appointed by the legislature Dr. Timothy Leary, Medical Examiner of the Southern Suffolk County District, told the commissioners that the work done by medical examiners is not adequately recognized from a financial standpoint.

In outside districts the medical examiners are paid seven dollars for a view and thirty dollars for an autopsy. On this basis the work of the medical examiner in the southern district would have called for the payment of $13,516 in 1928 which is more than double the present salary.

Dr. Leary properly told the commission that this work demands the highest type of professional culture as well as moral character. The medical examiner's work is often of vital importance in enabling courts and district attorneys to deal justly with criminal cases.

Massachusetts has an enviable reputation among the other states in the administration of criminal law and has not had the scandals which seem to be due in other places to the coroner system.

ALLEGED CURE OF PERNICIOUS ANEMIA

The Federal Department of Agriculture is reported to have endorsed the publication of the curative properties of foetal livers of calves in the treatment of pernicious anemia. This statement is based on the authority of the chief of the meat inspection service, who supplied the Ohio State University Hospital at Columbus with five pounds of foetal livers from healthy cows.

This liver was administered to a young man who was regarded as in danger of death and is reported to have recovered.

The report includes the statement that foetal livers are being used in the Mayo Clinic with gratifying results.

The Federal Service plans to supply medical institutions with foetal cows' livers. The future will determine the facts.

LIFE WASTAGE AMONG CHILDREN

A quarter of a million deaths of children below the age of 15 in a single year! This is the gruesome toll for the United States, says the Metropolitan Life Insurance Company, which declares that it is five times that suffered by the American Army in action in the World War. For children of school age the annual toll is found to exceed 45,000 lives, one out of every five being caused by accidents; influenza and pneumonia, diseases of the heart and tuberculosis follow accidents as important causes. Reducing the number of preventable accidents is indicated, therefore, as the most important step toward saving the lives of school children. *Children's Bureau.*

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CERTAIN CHANGES IN THE REGULATIONS GOVERNING THE REPORTING OF GONORRHEA AND SYPHILIS

THE Massachusetts Department of Public Health is announcing some changes in the regulations governing the reporting of gonorrhea and syphilis. The new regulations, which take effect January 1, 1930, will be found printed in the "Correspondence" section of this number of the JOURNAL.* Particular attention is called to the following changes:

(1) As in all other parts of the country, gonorrhea and syphilis in all forms and stages will be reported instead of, as previously, merely when communicable.

(2) The reports will be sent directly to the State Department of Public Health as was originally required instead of, as under the present amended regulations, to the local board of health and by them to the State Department. The reasons for this change seem to be purely empirical and based on experience that reporting to the local board of health did not work. As heretofore, identifying data in the cases will be required only if the patient fails to continue under treatment.

Syphilis is more prevalent than scarlet fever or diphtheria and several times more prevalent than typhoid fever or smallpox. Gonorrhea is two or three times as prevalent as syphilis. An intelligently directed medical attack upon these two diseases is the single measure which will produce immediate results. The physician who sees and treats gonorrhea and syphilis is the single representative of the public health in regular, intimate contact with the case. The physician, therefore, becomes not only the single source of public information concerning the prevalence of these diseases but also the only "health officer" to stand between the patient and the public health.

*Page 1177.

STUDIES ON STOMACH FUNCTIONS

SINCE the day of Beaumont, many minds have turned to the physiology and pathology of the stomach. Much has been done and much written, and the end is not yet.

There is no better index of the need for further knowledge in this field than the every-day procedure of gastroenterostomy for ulcer. However well it works, we don't know why it works; it is well-nigh as empiric a procedure as the administration of quinine for malaria, two hundred years ago.

Of recent contributions, those of James C. McCann from The Mayo Clinic are worthy of attention.

He first investigated[1] Boldyreff's theory that the acidity of gastric juice is controlled by regurgitation of neutralizing duodenal alkalis, bile, and pancreatic juice upward into the stomach. Using dogs, he prevented regurgitation by closing the upper duodenum and draining it into the lower small intestine, letting the stomach empty directly into the anastomosed jejunum. Fractional gastric analyses before and after this procedure showed identical curves. Neutralization, therefore, still occurred without regurgitation.

Further analyses made him conclude that the real mechanism of acid control is intragastric, and consists of, firstly, the gradual reduction of an established high rate of acid secretion to a lower rate, and secondly, an acid-combining power in the mucus secreted by the fundus. When acid secretion has fallen to the low basal rate of a resting stomach, the amount secreted is so small in volume that it is completely combined with the basal secretion of mucus. The stomach then contains only combined acid and neutral chloride.

Correlated fractional gastric analyses and X-rays[2] showed that emptying of the stomach increases progressively from early in digestion until digestion is complete. This increase in rate apparently depends upon progressive re-

laxation of the whole pars pylorica—of which the sphincter is the most efficient segment.

Contrary to our old beliefs, McCann found nothing which stimulated this relaxation. Free HCl or digested food did not do it. On the other hand, undigested food stimulated vigorous contraction. As the food was digested, peristalsis decreased until the antrum was relaxed. The opening of the pars pylorica, was, then, not a matter of any stimulus to relaxation, but of the fading of a stimulus to contraction—i.e., decrease of undigested food; because whatever the amount of digested food, if undigested food was added, contraction appeared. Probably the change from a solid to a fluid state of the meal, corollary to digestion, facilitates emptying.

The third paper[3] of the series deals with experimental peptic ulcer. Analyzing the literature and his own experiments, McCann believes there are two important causes: Mechanical and chemical. The mechanical, on the duodenal side of the pylorus is the force of the impinging stream ejected through the pylorus, and the destructive action of coarse cellulose foods. On the gastric side of the pylorus, the same friction of coarse cellulose material is abetted by the lack of protective rugae in the antrum, and its vigorous peristalsis. The chemical cause is "normal acid peptic activity."

Taken as a whole, these ulcer studies strongly suggest that Cohnheim's "unknown something which prevents the healing of ulcer" is only the action of acid in normal gastric concentrations, and pepsin, plus the mechanics of the region, which act as a definite handicap, once a lesion has been established.

REFERENCES

1 Studies on the Control of the Acidity of the Gastric Juice. James C. McCann. Am. Jour. Physiol., Vol. 89, No. 3, August, 1929, pp. 483-496.
2 Studies on the Emptying of the Stomach. James C. McCann. Am. Jour. Physiol., Vol. 89, No. 3, August, 1929, pp. 497-507.
3 Experimental Peptic Ulcer. James C. McCann. Archives of Surgery, October, 1929, Vol. 19, pp. 600-659.

REVISION OF THE PHARMACOPOEIA OF UNITED STATES

PHYSICIANS quite generally recognize the advantages of employing, whenever feasible, drugs listed in the U. S. Pharmacopoeia for these are required by both Federal and State laws to conform to certain standards as to composition, strength and purity. But many physicians do not realize their responsibility in determining what drugs are to be included in the Pharmacopoeia. The purpose of the book is officially stated to be "to provide standards for the drugs and medicines of therapeutic usefulness or pharmaceutic necessity sufficiently used in medical practice throughout the United States", etc. Naturally, the question of "therapeutic usefulness" is left to the physicians of the Revision Committee, whereas that of "pharmaceutic necessity" is left to the representatives of the pharmaceutical profession: if the physician, for example, desires his Fowler's solution to have its present color, the pharmaceutical profession must be permitted to establish standards for the vegetable dye, *Santalum rubrum*.

Since the quality of and standards for proprietary drugs can only be determined by the proprietors of the preparations, this class of drugs cannot be included in the U. S. P. This, however, is a matter of minor importance, for there are very few drugs of proved value which have not been made official, although, of course, there are almost innumerable proprietary mixtures of these on the market.

The members of the Pharmacopoeial Revision Committee are simply the official representatives of the medical and pharmaceutical professions and they are naturally desirous of making the work as useful as possible to the members of these professions.

In the ten years which elapse between the revision of the Pharmacopoeia, the views of physicians frequently undergo marked changes as to the usefulness of some drugs; some are found to be of very minor importance and others may be replaced by better preparations. It is also recognized that new uses may sometimes be found for old drugs, or that preparations which seemed superfluous to one generation may prove to have certain advantages over more recent additions, etc.

Many preparations which were included in the eighth revision (prepared by the Convention of 1900) and in the ninth revision (prepared by the Convention of 1910) were omitted from the tenth revision (prepared by the Convention of 1920). The question has been raised as to whether some of these are worthy of being reinstated. The Chairman of the Revision Committee, Professor E. Fullerton Cook, in a letter to the JOURNAL (Oct. 17, 1929, p. 793) stated that a questionnaire on this subject has been prepared and may be obtained by writing to him at 636 South Franklin Square, Philadelphia. In this questionnaire, the physician is simply asked to state whether he "often", "rarely", or "never" prescribes the preparations in question. Even if he does prescribe some of these preparations, a little investigation may convince him that, in some cases at least, the drugs in question were omitted because they were practically identical as regards therapeutic efficiency, with other, often more desirable, preparations.

Physicians of Massachusetts have a special interest in this subject, for several years before the preparation of the first U. S. P. the councilors of the Massachusetts Medical Society appointed a committee (consisting of Dr. James Jackson and Dr. John C. Warren) to prepare a pharmacopoeia for the use of this Society. This was published in 1808. The biographer of Doctor Warren states that this work cost these men a year's labor; he also remarks:

"Before this publication, monstrous anomalies in the preparation and names of medicines existed in this State" (a statement which might be applied to a number of proprietary drugs used by the present generation of physicians).

Physicians who are willing to assist the Revision Committee in their difficult task of selecting the drugs for inclusion in the next revision are urged to write promptly to Professor Cook for a copy of this questionnaire.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

MOISE, THEODORE S. A.B., M.D. Johns Hopkins University 1917. F.A.C.S. Formerly, Associate Professor of Surgery, Yale University. Assistant Surgeon, Eastern Maine General Hospital, Bangor, Maine. His subject is: "Gastro-Jejunostomy with a Transverse Jejunal Incision." Page 1129. Address: 25 Parkview Avenue, Bangor, Maine.

LUND, F. B. A.M., M.D. Harvard 1892. F.A.C.S. Surgeon-in-Chief, Carney Hospital. His subject is: "Melanotic Sarcoma of the Small Intestine." Page 1133. Address: 319 Longwood Avenue, Boston.

AMSDEN, HENRY H. Ch.B., M.D. Boston University School of Medicine, 1896. F.A.C.S. Ear, Nose and Throat Surgeon, Margaret Pillsbury General Hospital and New Hampshire Memorial Hospital. His subject is: "The Responsibility of the Medical Profession to the Citizens of the State." Page 1137. Address: 5 South State Street, Concord, N. H.

KINGSFORD, HOWARD N. A.M., M.D. Dartmouth 1898. Medical Director and Professor of Pathology, Dartmouth Medical School. His subject is: "A Review of One Year's Autopsy Service." Page 1141. Address: 6 Clement Road, Hanover, N. H.

HAZZARD, LAWRENCE R. A.B., M.D. University of Kansas School of Medicine 1918. His subject is: "Diaphragmatic Hernia." Page 1145. Address: Portsmouth, N. H.

SCHMITZ, HENRY. A.M., LL.D., M.D. Loyola University School of Medicine 1897. F.A.C.S. F.A.C.R. Professor and Head of Department of Gynecology. Attending Gynecologist, Mercy Hospital, Chicago and Cook County Hospital, Chicago. Consulting Gynecologist, Misericordia Hospital and Holy Cross Hospital. Consulting Radiologic Surgeon, Edward Hines Jr. U. S. V. Hospital. His subject is: "Some Diagnostic and Therapeutic Aspects of Infections of the Female Genital Organs." Page 1149. Address: 25 East Washington Street, Chicago, Illinois.

HORTON, LYDIARD H. A.B., Williams 1901. A.M., Ph.D. Columbia. Psychotechnical Director, Cartesian Research Society of Philadelphia (Inc.). From 1912-14 on Clinical Staff, Boston Psychopathic Hospital. Now associated with Evans Memorial for Clinical Research. His article is "College Disappearances: An Analysis of a Case." Page 1155. Address: Pierce Building, Copley Square, Boston.

THE DOCTOR'S SADDLE BAG

ON THINGS IN GENERAL, INCLUDING CHRISTMAS

ANOTHER Thanksgiving Day has passed, and we have entered into that period of the year when we slip almost insensibly from one family festival to another, for Thanksgiving is but an opening feature of the show, the main event of which is Christmas. The Christmas numbers of the magazines are already on our tables, the Thanksgiving numbers having appeared sometime earlier in the fall, and in a very short time, if they have not already done so, the department stores will be breaking out into a fresh, if not a vernal green, their choruses will be singing anthems on the stairs (if, indeed, they are not already singing them), and a variegated assortment of Santa Clauses, to classify them by anthropometric standards, will be donning chin whiskers of cotton wool, jackets of red cotton, and rubber boots of imitation leather.

The department store Santa Clauses contribute as much as any other single factor to the sophistication of our already none too unsophisticated young, for their efforts to reconcile a short and fat Santa Claus on Washington Street with a lean, long and cadaverous one on Tremont Street have been generally too much for their faith; they have usually resulted in a complete disbelief in the existence of the Saint whatsoever. In any event, the spirit of the holiday is already upon us, even if somewhat prematurely, and the busy marts of commerce are decorated for the occasion, even if the decorations are bound to become a little tiresome and more than a little shopworn and tarnished before the glad holiday actually arrives. It all contributes to the rapid passage of the month, a passage which is probably accelerated by the progressive shortening of the days.

This between festival interlude is for the doctor one which must be viewed with mingled feelings. If he is philosophically inclined he will be grateful for the interruption in the even tenor of his ways which the shopping season affords; his patients will be more intent on finding silk stockings for Cousin Jane and markdown cigarette lighters for Brother Harry than they will be on discovering peptic ulcers in their own anatomies. Having tangible and worth

while worries like these they will be less inclined to worry over themselves; they will find it more economical to drop dimes into the Salvation Army box than checks into the mail to pay for pills which have long since passed in the night. With the spectre of January bills looming in the none too distant future the doctor will do well to heed the friendly and oft repeated advice, "Physician, heal thyself," but his empty office will give him little aid or comfort in the situation. No respectable physician is well heeled from taxpaying time until the March coryzas settle like a brooding peace upon the land.

The dermatologists alone will experience a seasonal influx of practice, for many will be the itching palms extended towards them; but, alas, the cure will not be lucrative. For once, at least, they will be glad to seek the friendly environment of their free clinics to escape the importunities of such a practice, for they will find that importunity knocks more than once, and if repulsed will knock that man forever.

The postman and the choreman, the garbage collector and the janitor, the policeman and the gentleman who polishes the windows on rare occasions, all will need to have their joints lubricated with oil of silver and their smiles restamped upon their faces for the coming year like new coins coming fresh from the mint; an allusion which is not inept.

This, however, is altogether too gloomy a side from which to view the picture. It is good philosophy first to inspect the outside of the cloud and then, by complete inversion, present only the silver lining. The ashman, the choreman, etc., knowing that it is more blessed to give than to receive, confer a benison upon us by accepting our gifts. It is a spontaneous act of self-sacrifice on their parts, and it is often with reluctance that we allow them to make it—quite properly.

Jesting aside, is not the gift idea at Christmas quite disastrously overdone? It is a time of goodwill, of friendliness, of kind thoughts and quite naturally the custom arose to express these sentiments with little presents. The sentiment of giving from the heart is largely lost sight of with our modern competitive methods. With the younger generation the spirit of Christmas is becoming a spirit of acquisitiveness. We are a nation of spenders, and we spend too much from the purse, happy as that thought may be to the shopkeepers who are so largely responsible for it.

MASSACHUSETTS LEGISLATIVE NOTE

A BILL FOR MORE GENERAL PREVENTION OF SMALLPOX

The State Department of Public Health has prepared and will introduce a bill providing for the prevention of smallpox by compulsory vaccination of all children, except those exempted by a certificate issued by a registered physician.

A copy of this bill is appended.

Recent epidemics of smallpox have demonstrated the necessity of more stringent requirements and it is common knowledge that smallpox is a very prevalent disease in this country.

The Massachusetts Department of Public Health wisely wishes to have the people of this State thoroughly protected.

Vaccination prevents smallpox.

The time may come when those who are unwilling to unite in this protective measure may be made to feel that they are not in harmony with progressive State policies.

All that is necessary is to have the people express these wishes through the legislature.

THE COMMONWEALTH OF MASSACHUSETTS

In the Year One Thousand Nine Hundred and Thirty.

AN ACT RELATIVE TO VACCINATION AGAINST SMALLPOX

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

SECTION 1. Chapter one hundred and eleven of the General Laws is hereby amended by striking out sections one hundred and eighty-one to one hundred and eighty-three, inclusive, and inserting in place thereof the following new sections:—

Section 181. All children shall be successfully vaccinated against smallpox before they reach the age of one year and shall be so vaccinated in the seventh year of life. The parent or guardian of a child subject to the provisions of this section shall present to the board of health of the town where such child resides a certificate signed by a physician registered in this State that the child has been successfully vaccinated as herein required, which certificate shall be so presented within thirty days after such vaccination.

Section 182. If the parent or guardian of a child subject to the provisions of the preceding section presents to the board of health of the town where the child resides a certificate, signed by a physician registered in this state, that the physician has, at the time of giving certificate, personally examined the child and that he is of the opinion that the physical condition of the child is such that his health will be endangered by vaccination, he shall be exempt from the provisions of said preceding section for a period of not less than two months nor more than one year from the giving by the physician of said certificate, which period shall be determined by said board of health. Upon the expiration of said period, such board shall require that such child be vaccinated unless his parent or guardian presents a certificate, signed by a physician as aforesaid, that the condition of the child, as theretofore certified, continues, which certificate shall exempt such child to the same extent as the previous certificate presented.

Section 183. Any parent or guardian who fails to

have a child vaccinated if so required by section one hundred and eighty-one or one hundred and eighty-two shall be punished by a fine of not more than ten dollars.

Section 183A. The school committees of towns and the head masters of private schools shall not admit to any school under their charge any child under seven years of age who cannot give satisfactory evidence of having been successfully vaccinated, unless exempted as provided in section one hundred and eighty-two, and they shall not admit nor allow to remain in such school any child who is seven years of age or older and cannot give satisfactory evidence of having been successfully vaccinated since the age of six years, unless exempted as aforesaid. Said committees and masters shall immediately give written notice to the local board of health of all children who cannot give evidence of having been vaccinated as herein specified. Violation of this section shall be punished by a fine of twenty dollars.

Section 183B. The board of health of a town where any incorporated manufacturing company, infirmary, reform or industrial school, hospital or other establishment where the poor or sick are received, prison, jail or house of correction, or any institution supported or aided by the commonwealth is situated may, if it decides that it is necessary for the health of the inmates and employees or for the public safety, require the authorities of said establishment or institution, at the expense thereof, to cause all said inmates and employees to be vaccinated. For failure or neglect to cause such vaccination, if required as aforesaid, the person directly responsible for the conduct of such establishment or institution shall be punished by a fine of twenty dollars.

Section 183C. Boards of health, if in their opinion it is necessary for public health or safety, shall require and enforce the vaccination or revaccination of any or all the inhabitants of their towns. Whoever, being over twenty-one and not under guardianship, refuses or neglects to comply with such requirement, and the parents and guardians of children under twenty-one who are not vaccinated in compliance therewith shall be punished by a fine of not more than ten dollars.

Section 183D. Boards of health shall provide means of vaccination, when required by section one hundred and eighty-one or one hundred and eighty-two, without charge for those unable to pay therefor, and when required by section one hundred and eighty-three C, without charge for any person, and for said purpose shall appoint one or more registered physicians to perform such vaccinations at the public expense. Notice of such appointments shall, within seven days thereafter, be given to the department.

Section 183E. Boards of health shall enforce the provisions of sections one hundred and eighty-one to one hundred and eighty-three D, inclusive, and for failure or neglect so to do shall forfeit not less than fifty nor more than two hundred dollars.

SECTION 2. This act shall take effect on September first of the current year.

MISCELLANY

TUBERCULOSIS ABSTRACTS

Since Koch's discovery of tuberculin some 40 years ago, the search for a satisfactory specific against the tubercle bacillus has been ceaseless. Failure to find it is not surprising. Protection against tubercle bacilli depends ultimately on the power of the body to encapsulate them. This power, or "sensitization," is acquired only as the result of harboring the bacilli in the tissues. How to "draw the teeth" of the tubercle bacilli so that it will stimulate the beneficent physiological reactions resulting in tubercle formation and yet not destroy tissue has long challenged the research worker. Calmette has produced BCG, which is essentially a vaccine consisting of an attenuated strain of living bovine tubercle bacilli, which he claims are harmless and capable of engendering defense reactions of the cells. In America, opinion as to Calmette's claims has not yet crystallized and considerable skepticism is voiced.

BACILLUS CALMETTE-GUÉRIN

Professor A. Calmette of Pasteur Institute isolated a certain strain of bovine tubercle bacilli in 1908 and, during a period of 13 years, attenuated them by 230 passages on a medium of potato glycerin and bile. After experimenting with cattle, he applied the vaccine to babies, and he and other workers have by this time vaccinated more than 200,000 infants. Within ten days after birth, he gives by mouth a recently prepared microbic emulsion (which contains *living* bacilli) in three doses at intervals of 48 hours. This is easily absorbed by the intestinal mucosa. The bacilli are carried by protoplasmic cells which have phagocytic powers into the lymphatic system, the lymph glands, the spleen and the bone marrow. The vaccines are not digested but behave as harmless parasites and in a short time elaborate the defensive substances.

Calmette has gathered an imposing array of statistics from health departments, clinics, and physicians. His interpretations of these figures indicate that vaccinated infants of tuberculous parents are greatly more resistant to tuberculosis than the unvaccinated, particularly if vaccination is carried out during the first ten days of life. Furthermore, he interprets his statistics to mean that the general infant mortality is decidedly less among vaccinated than among unvaccinated children. For example, in one group of 3,808 vaccinated children in tuberculous surroundings, 3.1 per cent. died (from all causes) during the first year of life. The corresponding death rate for France of non-vaccinated children was 8.5 per cent., or more than twice as high. It is confidently claimed that the injection of BCG causes no unfavorable reactions, though rarely a slight rise in temperature is observed.

What is the duration of immunity acquired by this method? Calmette states it is longer than was at first supposed and believes that the immunity is maintained and reinforced by the subsequent infections which a child encounters in a tuberculous environment. Apes vaccinated in 1923 were still

refractory to the infection through cohabitation with artificially infected apes in 1927.—*The Preventive Vaccination of New-Born Infants against Tuberculosis by Means of the BCG, A. Calmette, Bull. de l'Union Internationale contre la Tuber., Vol. V, No. 1, Jan. 1928.*

CRITICISMS OF BCG

Petroff, of the Trudeau Sanatorium, challenges Calmette's conclusions. He points out, among other things, that Calmette made no clinical and X-ray studies of the vaccinated infants and that the mortality rate is not a suitable criterion to determine the protective value of the vaccine. He states that Calmette selected his cases to some extent and that bad risks were not vaccinated. He quotes Greenwood and Rosenfeld as having analyzed Calmette's statistics and found them faulty on several counts.

FIGURE 1. "R" colony of BCG, not virulent for guinea pigs. (Courtesy S. A. Petroff.)

More specifically, Petroff questions the claim that BCG is without danger. He has, during the past four years, studied the biological characteristics of four separate cultures of BCG. "Every one of the cultures occasionally produced progressive tuberculosis in guinea pigs and the lesions could be transferred to healthy animals." By cultivating BCG on fluid media, he succeeded in dissociating two distinct types of colonies; one waxy, with small wrinkles, with clear-cut, rounded and raised outlines, the other less common, slightly smaller, with irregular wrinkles. He designated these cultures as "R" and "S" respectively. The "R" colony produced tubercles when injected into guinea pigs but these tended to heal. The "S" colony produced progressive tuberculosis. Petroff claims that BCG is not "fixed" and that virulent strain can be dissociated from it in the laboratory. Recalling that mutability is one of the characteristics of bacteria, he warns that BCG, harmless when injected, may in time regain virulence.

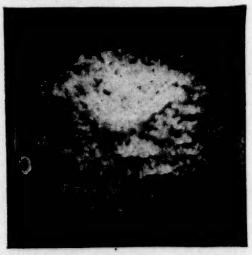

FIGURE 2. "S" colony of BCG isolated by Petroff, which proved virulent for guinea pigs. (Courtesy S. A. Petroff.)

In conclusion, he says: "We have now reached the cross-road and must decide as to what course we must pursue in our campaign against tuberculosis. Shall we tuberculize the whole world by adopting Calmette's method of vaccination with living microörganisms . . . or shall we continue those preventive methods adopted some years ago in this country and Canada, and so successfully employed in reducing the mortality from tuberculosis and preventing infection in infants."—*A New Analysis of the Value and Safety of Protective Immunization with BCG, S. A. Petroff, Amer. Rev. of Tuber., Vol. XX, No. 3, Sept., 1929.*

BCG IN NEW YORK CITY

Kereszturi reported experiences with the use of BCG on 183 babies in New York City. She concludes that infants of tuberculous mothers promptly vaccinated by mouth do not acquire tuberculosis as readily as the unvaccinated. She admits that the total number is small and not sufficient on which to base substantial conclusions but is of the opinion that BCG vaccination is relatively simple and harmless, that it gives some immunity, and that the degree and duration of immunity cannot be determined as yet.—*Oral Vaccination with BCG on Human Beings in New York City, Camille Kereszturi, Amer. Rev. of Tuber., Vol XX, No. 3, Sept. 1929.*

A CLINICIAN'S VIEWPOINT

Baldwin concedes that BCG is not without its danger but questions if that danger is greater than the risk a child runs in acquiring tuberculous infection in the natural manner. He inclines to the view that, while BCG has some virtue, it is at present an unnecessary instrument in the general battle against tuberculosis in this country. Assuming that tuberculous infection is gradually declining among children in this country, perhaps in the same ratio as in the death rate, he points out that there may soon be a generation of people who have acquired no immunity against tuberculosis, at which time some such artificial protection as is afforded by BCG may prove to be a very good substitute for the naturally acquired immunity on which we depend today. He favors more investigation before universal application of BCG is made in the United States.

To the frequently asked question as to whether it is the vaccination or the separation of the child from its mother that protects the infant, Calmette's answer is that the separation is but a brief one and not sufficient of itself to protect the child. But, said Dr. Baldwin, the mere fact that such separation is effected implies that the mother has been apprised of the danger of exposing the infant to

her tuberculosis and has been given a detailed explanation as to why the separation is necessary. Consequently, when the child is returned to its mother after a period of a few weeks, the mother will doubtless continue to exercise those precautions which have been impressed upon her; whereas, mothers whose babies have not been separated from them are not so likely to be aware of the danger of close contact.—*Discussion, New England Conference on Tuberculosis, Hartford, Conn., April 26, 1929.*

CORRESPONDENCE

THE REGULATIONS GOVERNING REPORTING OF THE VENEREAL DISEASES

The Commonwealth of Massachusetts
Department of Public Health
State House, Boston

November 15, 1929.

Editor
NEW ENGLAND JOURNAL OF MEDICINE:

The Massachusetts Department of Public Health wishes to announce through the columns of the JOURNAL changes in the regulations governing the reporting of syphilis and gonorrhea, a copy of which is enclosed. Copies of these regulations, together with supplies of report forms and envelopes, will be mailed to every licensed physician in the State in December.

The outstanding changes in the regulations are:

(1) That gonorrhea and syphilis in all stages shall be reportable. Previously they have been reportable only in communicable stages. With the early regulations of 1919 an effort was made to define the communicable stages. As would be expected, this was found unsatisfactory and with the change in the regulations in 1925 it was frankly left to the physician in each case to determine whether or not the case was communicable. In many instances conscientious physicians have found this impossible to determine. We are therefore now following the example of all the other states in which these diseases are reported in having gonorrhea and syphilis in all stages reportable.

(2) We are returning to the original method of having these diseases reported directly to the State Department of Public Health. In 1925 our regulations were changed so that the reports went to the local boards of health and through them to us, as with all other communicable diseases. This method had the advantage of logic and the advantage of educating local boards as to the prevalence of the diseases in their midst. We have found from experience that it has the very great disadvantage of discouraging reporting. Thirty per cent. of our communities that were reporting diseases regularly prior to the change have not reported since. The cynic might say that reporting to the local board has been effective in wiping out these diseases.

Other changes merely simplify for the physician his reporting of these diseases.

The new regulations provide a foundation for sound estimates of the problem which we face in our attempt to control these diseases. The new forms reduce to a minimum the effort and expense required of the physician in making reports. Bookkeeping is essential in sound public health administration. If information as to the prevalence of typhoid fever, smallpox, or diphtheria had been suppressed at the source, i.e., by the failure of the physician to report, little progress would have been made in their control. Public opinion would not have demanded improvement in sanitation nor have stood for wholesale immunization against diphtheria or smallpox. Gonorrhea and syphilis seldom come to public attention through ordinary channels of information. They continue to spread because public opinion has not been aroused against them. The public will remain indifferent until facts can be presented which overwhelm the present barrier of prudish evasion. Only the physicians who see the cases can provide the facts.

The Department of Public Health offers a variety of services to the physician who treats gonorrhea or syphilis. Some of the services are:—

Wassermann tests, spinal fluid tests, examinations of smears for the gonococcus, free arsphenamine, sulpharsphenamine and neoarsphenamine for the treatment of syphilis, free silver nitrate for the prevention of gonorrheal ophthalmia neonatorum, up-to-date information concerning treatment, literature to support the physician in his insistence that the patient needs treatment beyond the relief of symptoms, talks to medical groups on treatment and control, and clinics for patients unable to pay.

We believe that physicians will reciprocate to the extent of keeping the State informed in the matter of prevalence and in helping the State and local boards of health to control the dangerous case and the source of infection, by reporting the names of those who are out of control.

Yours truly,
GEORGE H. BIGELOW, M.D.,
Commissioner of Public Health.

The Commonwealth of Massachusetts
Department of Public Health

REGULATIONS GOVERNING THE REPORTING OF GONORRHEA AND SYPHILIS

In compliance with the provisions of Chapter 215, Acts of 1925, gonorrhea and syphilis, having been declared diseases dangerous to the public health, shall be reported on and after January 1, 1930, in the manner provided by the following regulations:

1. Whenever a physician has reason to believe that a person whom he has examined is suffering from gonorrhea or syphilis, in any form or stage, he shall immediately report the same to the State Department of Public Health. Such report shall contain the name and stage or form of the disease, the method of diagnosis, the age, sex and marital state and community of residence of the patient, but not the patient's name nor street address.
2. The physician shall furnish each such patient with such circulars of information and advice concerning the disease in question as may be pro-

vided for that purpose by the State Department of Public Health.

3. The physician shall ascertain, if possible, whether such patient was in consultation previously with another physician over the same infection, and if so, in addition to making the usual report of the case to the Department of Public Health, he shall notify the physician previously consulted of the patient's change of medical advisor. The patient shall be informed that failure to disclose such previous consultation will result in the report of his name and address to the Department of Health by the physician previously consulted, as hereinafter provided.
4. Whenever a person suffering from gonorrhea or syphilis shall fail to return to his physician for observation or treatment, or to give satisfactory evidence that he is under the care of another physician as provided in the foregoing Section, or to give satisfactory evidence of reasonable inability to keep the appointment, the physician shall report the same to the State Department of Public Health, giving the patient's name, address, age, sex and disease, within the time hereinafter provided as follows:—Within one week of the date of the missed appointment in the case of primary syphilis, secondary syphilis with lesions of the skin or mucous membranes or in which such lesions have been healed less than one month, congenital syphilis with lesions of the skin or mucous membranes, syphilis in pregnant women, and acute gonorrhea: Within two weeks of the date of the missed appointment in all other forms or stages of syphilis and chronic gonorrhea.
5. Whenever a person suffering with primary or secondary syphilis has lesions in the mouth or upon the exposed portions of the body and is employed in any occupation requiring regular, direct contact with other persons, such for example, as barber, hairdresser, manicurist, waiter, waitress, nursemaid, domestic, nurse, etc., such person shall be ordered by the physician to discontinue such occupation until in the opinion of a physician, the lesions are healed, and whenever the physician is not willing to assume responsibility for the obedience of the patient to such order, the name, address, age, sex, disease and occupation of such person shall be reported immediately by the physician to the State Department of Public Health.
6. Whenever a physician believes a patient to be suffering from gonorrhea or syphilis he shall immediately and, if necessary, repeatedly, endeavor to learn the identity of the source of the patient's infection. If within two weeks of identification the alleged source of infection has not given satisfactory evidence of being under the care of a physician, the physician securing the identification shall report the name, address, age and sex of such alleged source of infection and the disease for which he or she is said to be responsible, to the State Department of Public Health.
7. The State Department of Public Health shall forward to the board of health of the city or town of residence of every patient reported by name and every reported source of infection, a copy of such report, within twenty-four hours after its receipt. Immediately upon the conclusion of its investigation the board of health of said city or town shall report the result thereof to the State Department of Public Health.
8. At the end of every month the State Department of Public Health shall forward to the boards of health of cities and towns a report of the total number of cases of gonorrhea and syphilis, if any, by sex, which have been reported during the month as residing in such city or town.
9. Any and all previous regulations of the State Department of Public Health, governing the reporting of gonorrhea and syphilis are hereby repealed when the foregoing regulations take effect.

GEORGE H. BIGELOW, M.D.,
Commissioner of Public Health.

Approved and adopted at a meeting of the Department of Public Health held on October 8, 1929.

CRITICISM OF THE EDITORIAL ENTITLED "THE NEW SHRINE"

To the Editor,
The NEW ENGLAND JOURNAL OF MEDICINE.

Dear Sir:—

The writer of the editorial in the issue of November 28, 1929, forgot that many members of the societies of which the JOURNAL is the official organ, are Catholics. Some of his remarks are, to say the least, irritating; I refrain from using a stronger word.

The writer says, among other things:—"Modern miracles of healing generally resolve themselves into two classes — the healing of those who had only imaginary disease to begin with and the imaginary cure of those afflicted with organic disease". There are two more classes—the healing of those afflicted with organic disease and those afflicted with spiritual ills.

The last paragraph of the editorial is particularly offensive:—"The amazing thing is to realize what a little distance the human mind has travelled since the mysticism of the middle ages; what a short step it is back to the days of Salem witchcraft. One can almost believe that the terror of that period might be repeated today".

As there is no similarity between "mysticism of the middle ages", "Salem witchcraft", and the events at Malden cemetery, the writer need not worry. There will be no "terror". I feel sure that he did not intend to offend anybody, but he has done so by the use of words, the meaning of which he does not know.

I would suggest that he go to the nearest public library and learn from the Catholic Encyclopedia just what miracles are; what "mysticism of the middle ages" really was and is today; and also let him read up about the proven cures at Lourdes and at other shrines. "*Ne sutor ultra crepidam*". At any rate, let him refrain from writing about miracles, shrines and mysticism, until he has learned more about them.

Respectfully yours,
WILLIAM P. DERBY, M.D.

Framingham, December 1, 1929.

DR. H. W. ORR EXPLAINS HIS TREATMENT

Lincoln, Nebraska, November 20, 1929.

To the Editor,
NEW ENGLAND JOURNAL OF MEDICINE,
Boston, Massachusetts.

Dear Sir:

I have just received your issue of November 14th 1929, and have read Dr. F. J. Cotton's article on Osteomyelitis. A year and a half ago or thereabout, it was my privilege to speak before the Orthopedic Club in Boston. Dr. Cotton was present and heard the statement of my method in the treatment of osteomyelitis and compound fractures. Dr. Cotton himself, took part in the discussion and heard the discussions of several others so that I find it quite disappointing to have him refer to my method as the "grease" method of treating osteomyelitis.

For those of your readers who have no other information in regard to my method than that conveyed in Dr. Cotton's article, I respectfully request the privilege therefore, of making a brief statement as to what the method is and as to how it differs from that suggested by Dr. Cotton and that described by him in his article.

Since the publication of my recent book there have been so many excellent reviews that it will not be necessary for me to employ my own words in making this statement. Please allow me to quote the following, therefore, from the recent review in the *British Journal of Surgery*. These selections will show an appreciation of the principles involved and of details of the method that render it unnecessary for further comment.—"The Orr method of treatment is the application to infected wounds, especially of the bones and joints, of the principle of thorough antiseptic cleansing, absence of suturing—the wound being left widely open and packed with sterilized vaselin gauze—prolonged and absolute rest obtained by fixing the whole limb and, if necessary, the trunk, in a plaster case, and leaving the wounds untouched for long periods—that is, for about a month or six weeks."

"To describe the Orr method as that of 'drainage and Rest' entirely fails to indicate its essential features, which are the non-suture of the wound, the use of vaselin gauze as a drainage material, and the sealing up of the limb in a plaster case which is unopened for several weeks. In the treatment of open infected fractures the patient is placed on a traction apparatus and the fracture fully and accurately reduced. Then adhesive plaster or skeletal transfixion is applied so as to maintain the correct position after the plaster has been put on. The open wound is cleaned with iodin and then spirit, left widely open and packed with vaselin gauze. The whole limb, including the joint above and below the fracture, is put up in a plaster case to which are attached the transfixation pins or traction bands. Nothing more is then done for four to six weeks. It needs no argument to establish the advantage of this method if it can be carried out safely, for it will not only save the pain and worry of daily dressings, but also may allow the patient to return home between the monthly re-application of plaster and dressings."

"It is admitted that these infected limbs usually develop a marked odour before the time comes to change dressings, and in some cases there is actually a trickling out of discharge from the plaster splint, but this does not affect the main points, which are that the patient has no pain or temperature and that the wound closes and heals by granulation much more smoothly and rapidly than when it is subjected to daily dressings."

"*We heartily congratulate Dr. Orr on a brilliant piece of work and a most convincing exposition, and we confidently look forward to the time when his method will be acclaimed as a real and epoch-making advance in the treatment of the infections of bones and joints.*"

In addition to the above it is only necessary to add that the method has now been employed in many, many cases; reports have been received from surgeons in practically every State in this country and from many in other countries. The application of the principle of rest, both to the wound and to the injured extremity, has the effect of increasing the patient's resistance, of protecting the wound against secondary and mixed infection, of securing sound healing from the bottom of the wound, and of obtaining recovery of the injured parts in the best possible position for subsequent function.

All of these features are essential to a proper appreciation and employment of the method which has been advocated in my various publications and in my book.

If you will give this letter space in your JOURNAL it will be very much appreciated.

Very respectfully yours,

H. WINNETT ORR, M.D.

RECENT DEATH

WHITE—DR. HERBERT WARREN WHITE of Roxbury, who died suddenly Nov. 24, 1929, was born in Charlestown in 1858 of old New England stock and he lived through much of his boyhood in the town of Randolph. Having graduated from the Harvard Medical School in 1880, he spent two years of study in Vienna, Paris, London, Edinburgh and New York before beginning his practice on Dudley street, Roxbury, in 1882. He continued his medical work in Roxbury from that time until his death, a period of forty-seven years.

He was one of the founders of the New England Baptist Hospital and for many years served as visiting physician at St. Elizabeth's Hospital and as professor of theory and practice of medicine at Tufts College Medical School in Boston. He was a member of the American Medical Association, the Massachusetts Medical Society and the Roxbury Society for Medical Improvement.

Prominent and untiring in church and charitable work, he was senior deacon of the Dudley Street

Baptist Church; past president of the Roxbury Charitable Society and a long-time member of the Baptist Social Union. He also was a member of Washington Lodge of Masons.

In 1882 he married Elizabeth A. Dudley of Boston who survives him with two sons, Dr. Paul D. White of Boston and Dr. Warren White of Greenville, S. C., and a daughter, Mrs. Andrew F. Faden of Hyde Park.

NEWS ITEM

A GRANT TO THE DARTMOUTH MEDICAL SCHOOL

Dr. John P. Bowler, Dean of the Dartmouth Medical School, has announced the gift of $80,000 by John D. Rockefeller, Jr.

This money will be used for research work in physiological optics.

The work under this grant will be carried on by Prof. Adelbert Ames, Jr., and Dr. Gordon H. Gliddon, who have been conducting experiments in Wilder Hall. In June, 1928, they presented their findings and exhibited the apparatus used in this study at the meeting of the American Medical Association in Minneapolis. These scientists were awarded medals in recognition of their contributions to the application of physics to ophthalmology.

NOTICES

THE GRADUATING EXERCISES OF THE PETER BENT BRIGHAM HOSPITAL SCHOOL FOR NURSING

The Members of the Corporation of Peter Bent Brigham Hospital of Boston, have issued invitations for the Graduating Exercises of the School for Nursing, Assembly Hall, Simmons College, 300 The Fenway, Friday evening, December the sixth, nineteen hundred and twenty-nine, at eighty-thirty o'clock.

Reception from nine-thirty until twelve at the hospital.

REMOVAL

Dr. Haskell Talamo announces the opening of his office at Suite 202, Professional Building, 27 Elm street, Worcester.

UNITED STATES CIVIL SERVICE EXAMINATIONS

SENIOR MEDICAL OFFICER (INTERNAL MEDICINE), $4,600 A YEAR; JUNIOR MEDICAL OFFICER (INTERNE), $2,000 A YEAR

SAINT ELIZABETH HOSPITAL, WASHINGTON, D. C.

Applications Must Be on File with the Secretary of the Fourth U. S. Civil Service District, Washington, D. C., Not Later Than December 26, 1929

The United States Civil Service Commission announces open competitive examinations for the positions named above. Vacancies in Saint Elizabeth Hospital, Washington, D. C., and vacancies occurring in positions requiring similar qualifications, will be filled from these examinations, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Basis of ratings.—Competitors will not be required to report for examination at any place, but will be rated on their education, training, and experience, on a scale of 100, such ratings being based upon competitors' sworn statements in their applications and upon corroborative evidence.

SENIOR MEDICAL OFFICER

Duties.—Under general direction, to have charge of the care and treatment of a large group of patients suffering from physical diseases; to direct physicians, nurses, and attendants in the work incident to the management of a group of hospital wards; to diagnose, prescribe treatment, instruct medical students and student nurses, and related work. For the present vacancy it is desired to secure a person with a modern medical education, abreast of the latest medical developments, with a co-operative and tactful personality to enable him to make good contacts with mental patients.

JUNIOR MEDICAL OFFICER

Duties.—Under immediate supervision, to admit patients, take histories, make physical and mental examinations, and record findings; to make ward rounds of inspection, note charts, record observations; to prescribe for minor ailments or for acute or emergency cases and to dispense medicine in emergency; to perform minor surgical operations and to assist at major operations and in redressing; to administer anaesthetics; to make routine laboratory tests and analyses; to assist at out-patient clinics in dressing and in administering vaccines; to keep records, make up case histories, answer correspondence relating to patients, and compile statistics requiring medical training.

Opportunities.—Two interneships are offered, as follows:

(a) An accredited interneship of two years (American Medical Association, Classification 1), consisting of a rotating service of four months' surgery, four months' acute medical service, four months' chronic medical service, six weeks' obstetrics (affiliation), six weeks' pediatrics (affiliation), three months' general laboratory, and six months' psychiatry.

(b) A postgraduate interneship in psychiatry (American Medical Association, Classification 2) for one year is offered. For this interneship physicians who have already had an accredited interneship are desired, although applicants who have not had an accredited interneship will be accepted.

REPORT AND NOTICES OF MEETINGS

THE YALE MEDICAL SOCIETY

At meetings of the Yale Medical Society the following papers were presented. Dr. Casper Burn reported, "A Study of the Bacterial Flora of Organs and Body Fluids at Necropsies."

A careful systemic bacteriological study was made upon the organs and body-fluids that were obtained from 168 necropsies. It was the purpose of this communication to make a preliminary statement concerning the results obtained and the technique employed. The collection of the material from the organs and body-fluids consists of carefully shaving the surface of the organ or vessel and removing a portion of the tissue. The material is immediately placed in a sterile receptacle and taken to the laboratory where various kinds of media are inoculated. The media used routinely for every organ and fluid are (1) a surface infusion agar plate that contained 5% rabbit blood; (2) infusion broth; (3) Holman's Meat Media and (4) Sabourand's agar. In addition for each fluid specimen obtained, two pour agar plates are prepared for the purpose of a quantitative estimation of the organisms present. Direct smears that have been stained by a special bacteriological stain have recently been added as a routine procedure for every organ or fluid cultured. This is to serve as a microscopic check for the cultured findings.

The bacteriological studies were made upon necropsies from many different pathological conditions, including deaths from acute and chronic causes and several deaths due to accidents. There was, in 75% of the necropsies an average of one to five hours elapsing between the time of death and the time of culturing. Very few necropsies had an interval of 24 to 48 hours before culturing. Of these, it is surprising to find that the greater number were free of organisms. However, it was found that if there were seven to nine hours elapsing between time of death and time of culturing there would be an increase in the frequency of occurrence of anerobic organisms within the tissues. The organism that was predominating was a large gram positive spore forming rod which resembles bacillus sporogenes in many of its cultural characteristics. Yeasts and molds were absent from the cultures, except from the lungs and bronchi. From this source, the green mold was commonly present.

Dr. Richard W. Jackson discussed "The Metabolism of Tryptophane." Eleven indol compounds were fed to rats. Since it is known that rats deprived of tryptophane lose weight, this fact was employed as a criterion for judging the effect of other compounds fed to these animals on a tryptophane-free diet. Only one compound, indol pyuric acid, was found which produced growth in rats. It was also noted that growth stopped when this compound was taken from the diet. The conclusion is drawn that indol pyuric acid seems to replace tryptophane in the diet of rats, and thus probably lies in the main path of the metabolism of tryptophane.

(To be continued)

HAMPSHIRE DISTRICT MEDICAL SOCIETY

Dr. R. Nelson Hatt of Springfield will address Hampshire District Medical Society Wednesday, Dec. 11, 1929, at 11 a. m. on "Some Orthopedic Problems in General Work."

L. O. WHITMAN, *Secretary.*

AMERICAN HEART ASSOCIATION, INC.

The Annual Meeting of the American Heart Association will be held on Monday, February 3, 1930, at the New York Academy of Medicine, Fifth Avenue and 103rd Street, New York.

I. C. RIGGIN, M.D., *Executive Secretary.*

THE SECTIONAL MEETING OF THE AMERICAN COLLEGE OF SURGEONS

The Sectional Meeting of the American College of Surgeons for the states of Massachusetts, Maine, Connecticut, Rhode Island, New Hampshire, and Vermont is to be held at Worcester, Massachusetts, on January 6 and 7, 1930, with headquarters and registration at the Bancroft Hotel.

Fellows of the New England States and a group of visiting surgeons will furnish the program for the scientific meeting. The clinical addresses will be given by visiting surgeons.

PROGRAM

MONDAY, JANUARY 6

Morning	
8:00 — 11:00	Clinics at local hospitals.
11:30 — 12:30	Clinical Address and Demonstration.
9:30 — 12:00	Hospital Conference in the Ballroom of the Bancroft Hotel. Round Table Conference and Discussion of Administrative Problems in Hospitals.
Afternoon	
2:00 — 4:30	Hospital Conference in the Ballroom of the Bancroft Hotel. Addresses, Papers, Round Table Conference and General Discussion of Practical Problems affecting the Administrative and Professional Efficiency of the Hospital.
4:30 — 5:00	Meeting of the Fellows of the American College of Surgeons in the Ballroom of the Bancroft Hotel.
Evening	
8:00 — 10:00	Community Health Meeting in the Ballroom of the Bancroft Hotel.

TUESDAY, JANUARY 7

Morning	
8:00 — 11:00	Clinics at local hospitals.

11:30 — 12:30 Clinical Address and Demonstration.

9:30 — 12:00 Hospital Conference at one of the local hospitals. Practical Demonstrations and Round Table Conference—Hospital Planning, Construction, Equipment, Organization and procedures.

Afternoon

2:00 — 4:30 Hospital Conference at one of the local hospitals. Practical Demonstrations and Round Table Conference—Hospital Planning, Construction, Equipment, Organization and Procedures.

2:00 — 4:30 Scientific Meeting in the Ballroom of the Bancroft Hotel.

MASSACHUSETTS PSYCHIATRIC SOCIETY

Professor Eugen Bleuler, formerly director of the Psychiatric Clinic at Zurich, Switzerland, will be the guest speaker of the Society at its next meeting. Professor Bleuler is the outstanding European psychiatrist and is best known for his contributions to the literature of Schizophrenia. His text-book on Psychiatry is in its fourth American edition.

The meeting above referred to is scheduled for the evening of Saturday, December 7, at 8.00 o'clock in the John Ware Hall of the Boston Medical Library. Professor Bleuler will speak on "Physiologic and Psychic Symptoms in Schizophrenia".

Refreshments.

WINFRED OVERHOLSER, M.D., *Secretary.*

HARVARD MEDICAL SOCIETY

The next meeting of the Harvard Medical Society will be held in the amphitheatre of the Peter Bent Brigham Hospital on Tuesday evening, December 10, at 8:15.

Program:

1. Presentation of Cases.
2. The Chiasmal Syndrome, by Dr. Harvey Cushing, Surgeon-in-Chief of the Peter Bent Brigham Hospital.

W. P. MURPHY, *Secretary.*

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

1929-1930—Massachusetts Dietetic Association. Complete schedule appears on page 852, issue of October 24.

December 7—Massachusetts Psychiatric Society. Complete notice appears above.

December 10—Harvard Medical Society. Detailed notice appears above.

December 16-17—The American Pharmaceutical Association. Complete notice appears on page 1019, issue of November 14.

January 6-7—The Sectional Meeting of the American College of Surgeons. Detailed notice appears on page 1181.

February 3—American Heart Association. Complete notice appears on page 1181.

February 10-14, 1930—American College of Physicians. Complete notice appears on page 853, issue of October 24.

March-October, 1930—International Medical Postgraduate Courses in Berlin. Complete notice appears on page 853, issue of October 24.

May 5-10, 1930—The International Congress on Mental Hygiene. Detailed notice appears on page 853, issue of October 24.

September 4-8, 1930—Fifth International Congress on Physiotherapy. Complete notice appears on page 906, issue of October 31.

DISTRICT MEDICAL SOCIETIES

Essex North District Medical Society

January 8, 1930—Wednesday—Semi-annual meeting at Centre Church Vestries, Main Street, corner of Vestry Street, opposite City Hall, Haverhill, (Telephone 548) at 12:30 sharp.

May 1—Thursday—Censors' meeting at Hotel Bartlett, 95 Main Street, Haverhill, (Telephone 3430) at 2 P. M. sharp. Candidates should present their diplomas to the Secretary one week in advance.

May 7—Wednesday—Annual Meeting.

J. FORREST BURNHAM, Secretary.

Essex South District Medical Society

Wednesday, January 8, 1930—At the Beverly Hospital. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. Harry H. Germain, Boston. Subject: "Some Aspects of Cancer of the Colon." General Discussion from the floor.

Wednesday, February 5, 1930—Council Meeting, Boston.

Wednesday, February 12, 1930—Danvers State Hospital, Hathorne. Clinic 5 P. M. Dinner 7 P. M. Speakers: Dr. Winfred Overholser. Subject: "Criminology and Psychiatry." Mr. Clark, District Attorney for Essex County, who will speak on the legal aspect.

Wednesday, March 5, 1930—Lynn Hospital. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. R. S. Titus, Boston. Subject: "Some Aspects of Caesarean Section," illustrated with Moving Pictures. General Discussion from the floor.

Wednesday, April 2, 1930—Hotel Hawthorne, Salem. Dinner at 7 P. M. Speaker: Dr. Timothy Leary, Boston. Subject: "Diagnostic and Therapeutic Pitfalls in Intracranial Pyogenic Infections."

Thursday, May 1, 1930—Censors meet for Examination of Candidates at Salem Hospital at 3:30 P. M.

Tuesday, May 13, 1930—Annual Meeting. The Tavern, Gloucester. Speaker: Dr. C. Macfie Campbell, Director of Boston Psychopathic Hospital. Subject to be announced later. Ladies invited. Dancing.

R. E. STONE, M.D., Secretary.

Franklin District Medical Society

The meetings of the Franklin District Medical Society will be held at the Weldon Hotel, Greenfield, Mass., on the second Tuesdays of January, March and May, at 11 A. M.

CHARLES MOLINE, Secretary.

Hampshire District Medical Society

December 11—Detailed notice appears on page 1181.

Additional meetings of Hampshire District will occur at 11 A. M. the second Wednesdays of February and April and will be held at the Dickinson Hospital, Northampton. The annual meeting will be held in May.

LUTHER O. WHITMAN, M.D., Secretary.

Middlesex East District Medical Society

January 15—At Boston, Harvard Club.

March 12—At Melrose.

May 13—At Unicorn Country Club, Stoneham.

ALLAN R. CUNNINGHAM, Secretary.

Middlesex South District Medical Society

Winter meetings—jointly with Suffolk District.

April 16, 1930—Annual meeting. Commander Hotel, Cambridge. Program to be announced.

May, 1930—Censors' meeting.

ALEXANDER A. LEVI, Secretary.

Norfolk District Medical Society

January 27, 1930—Roxbury Masonic Temple. "Recent Advances in Diagnosis and Treatment of Syphilis." The speakers will be Drs. C. Morton Smith and Austin W. Cheever.

February 24, 1930—Roxbury Masonic Temple, 8:00. Dr. Edwin H. Place has been invited to read a paper and has been given carte blanche in the selection of his subject.

March 24, 1930—Roxbury Masonic Temple. Dr. Burton E. Hamilton. Subject to be announced.

May 6, 1930—Annual Meeting. Program to be announced.

The Censors meet for the examination of candidates, May 1, 1930, in the Roxbury Masonic Temple, 171 Warren Street, Roxbury, at 4:00 P. M.

Applications must be in the hands of the Secretary at least one week previous to date of examination.

Owing to inability to engage the Roxbury Masonic Apartments on the last Tuesday of the month, such meetings as will be held in the Roxbury Temple will be held Monday evenings as per the dates above.

FRANK S. CRUICKSHANK,
Secretary, Norfolk District Medical Society.